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FINE ARTS



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ALL GIVE YOUR THEY ALSO TRANS- TURE WITH REAR
CTURES A REAL MIT-BUT DO THEY PROJECTION BACK-
OPPER QUALITY REALLY FILTER? GROUNDS & TOYS



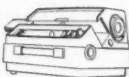
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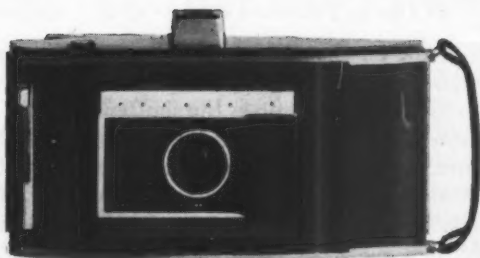
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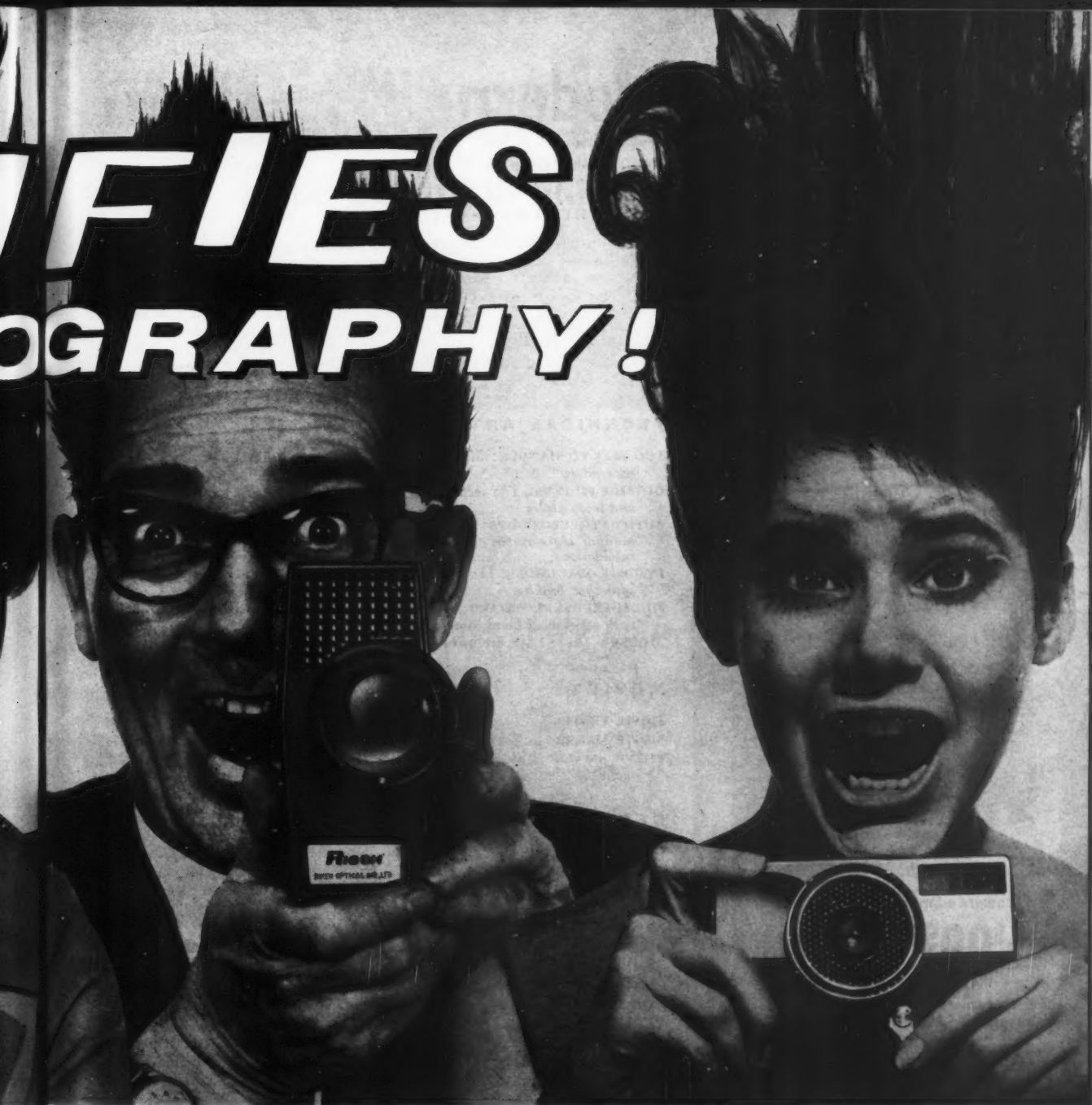
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modern PHOTOGRAPHY

AUGUST 1961, VOL. 25, NO. 8

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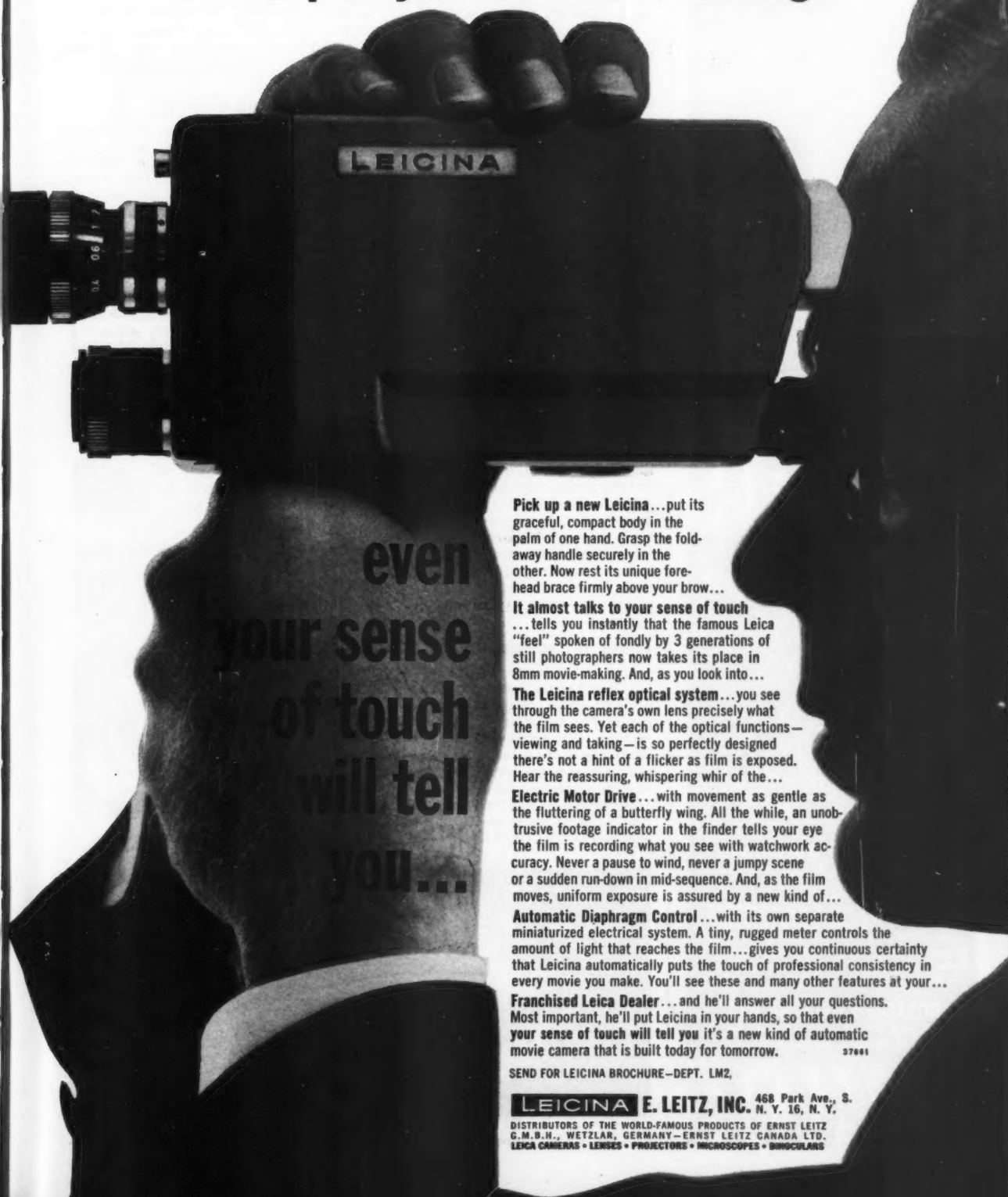
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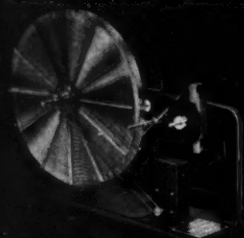
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Coffee Break WITH THE EDITORS

THIS MONTH'S COVER . . .

. . . should give you an impression of variety, what with that wasp goggling down at Elizabeth Taylor, the fireworks bursting over a red filter, and so on. If you're interested in taking portraits of insects, or any other color close-ups, by means of flash, Hermann Eisenbeiss tells you how to do it the easy, no-calculation way (page 56). He made this Agfacolor shot with a Praktisix 2 1/4 x 2 1/4 camera. Burt Glinn illustrates an idea for human portraits with his picture of Elizabeth Taylor, which you'll find enlarged on page 67. You'll also find an enlargement of the fireworks shot, by Warren Seigmond, which is one of the suggestions for long exposures at night given in the story on page 68. The Ektachrome picture of light striking a red filter shows two of the things a filter does (transmits and reflects) and implies the third (absorbs). The picture was taken by Lee Hocker and George Kanda, who are students of Richard Zakia and Hollis Todd, the authors of the full filter story on page 52. The graph, top right, compares the acutance of Kodachrome and Kodachrome II: a full technical comparison is on page 74. Finally, movie makers interested in table-top work will turn to the story on page 78 after having their appetites whetted by this back-projection setup (photographed by Conrad Studios).

BEHIND THE SCENES . . .

One of the last assignments of the late Bob Landry was to shoot a series of wide-angle pictures showing the movie *The Guns of Navarone* in the making (it's reviewed on page 17). His picture of the studio-made storm sequence appears below; the realistic-looking screen version appears at right.

Incidentally, another photographer was on hand for some of the location shooting of *The Guns of Navarone*, on

the Greek island of Rhodes. Our Consulting Editor, John Wolbarst, happened to be vacationing there at the time (see "The Well Traveled Camera," March 1961).

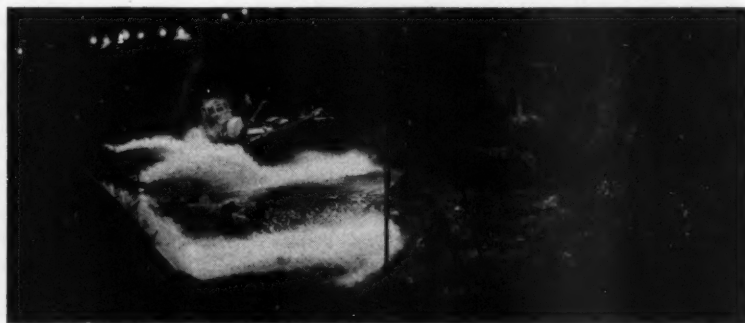
WE'RE CARRIED AWAY, BUT . . .

Does this happen to you too? We're watching a movie or a play, or reading a novel, and we're completely absorbed in it when a photographer appears on the scene. And suddenly this photographer (who's probably supposed to be a professional) is made to do something so inept or nonsensical that our attention is jolted right away from the action of the play/movie/novel. To take just one example from each medium, there's the movie maker in the play *The Connection* who never winds his spring-powered camera and who takes close-ups from about 1 ft. with what is apparently a fixed-focus lens. Then there's the swarm of news photographers in the movie *La Dolce Vita*

(Continued on page 32)

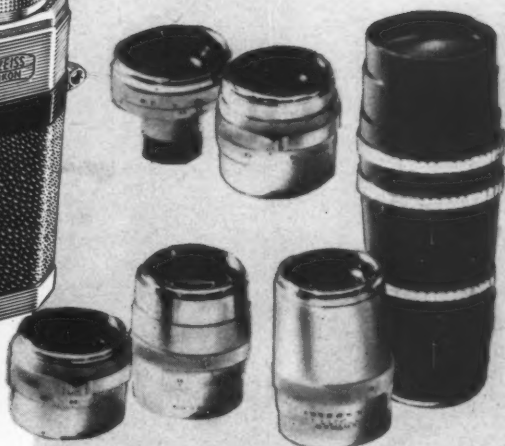


Is this a real shipwreck? . . .



BOB LANDRY

. . . No, it's all done in a movie studio, for a scene in *The Guns of Navarone*.



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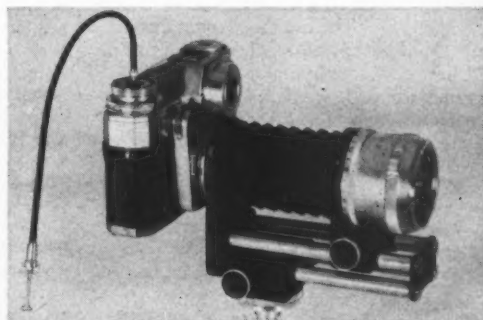
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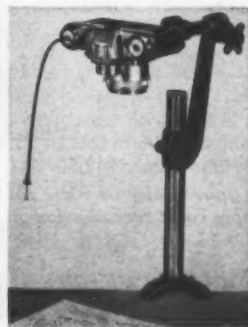
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LETTERS TO THE EDITOR

Watch for Vintage Leica

Last month a thief invaded our premises and stole my personal M2 outfit plus a notably historic Leica A.

The Leica Model A is No. 128, the 29th Leica ever sold. (The first commercial cameras were started with the serial number 100.) The camera was manufactured in 1923 and sold in the following year. It is equipped with a 50mm Elmax f/3.5 lens. (The "max" is the first name of Dr. Berek, designer of the early Leica lenses.) Just prior to this theft the camera was repainted and appears in brand-new condition. A reward of \$200 for the return of this camera has been announced jointly by E. Leitz, Inc., and myself.

The M2 outfit was self-contained in an Original Benser case and included the following serial-numbered items: Leica M2 camera body No. 982861 with Camian rapid rewind crank and "Strapeteer" carrying strap; 21mm f/4 Super-Angulon lens No. 1646854; 35mm f/2 Summicron lens No. 1632099 (black); 50mm f/2 "DR" Summicron lens No. 1375813; and 90mm f/2.8 Elmarit lens No. 1692540.

The above equipment is covered by insurance, but not the "128" camera, which is the thing I really must recover.

New York, N.Y.

Bob Schwalberg
E. Leitz, Inc.

Too Serious to Handle

I think you editors are taking yourselves too seriously and your column not seriously enough.

What could possibly be controversial about "When is the best time to buy camera equipment?" ("Too Hot to Handle," March 1961) or some of the other innocuous questions that keep appearing on this page of your magazine? If the trend keeps up, my suggestion would be to either drop the title and treat inquiries as you would other questions or else change the name of this column to "Too Boring to Handle."

Brooklyn, N. Y.

M. G. Schmidt

A magazine which tells you to buy equipment after Christmas and has a list of advertisers all year long is dealing with something too hot to handle. By the way, if you're so bored with the questions asked in our column, where are yours?—ED.

Try a Magic Carpet

Standing in the middle of Persepolis, Darius' famed palace in Persia, on a

cloudy day (making for some real tricky lighting problems), I fell on a slippery rock and my Weston exposure meter struck a rock. Luckily, it was still in its case, but even then, as I cautiously removed it, I heard the rattle of something loose. A quick inspection assured me that the photocell apparatus was still intact and undamaged, but the glass shield over the needle had become separated from the metal frame of the meter. The net effect was that while the meter worked, I had to hold it upside down, thereby allowing gravity to pull the glass away so that the needle would swing free. How many readings can you take with an upside-down meter?

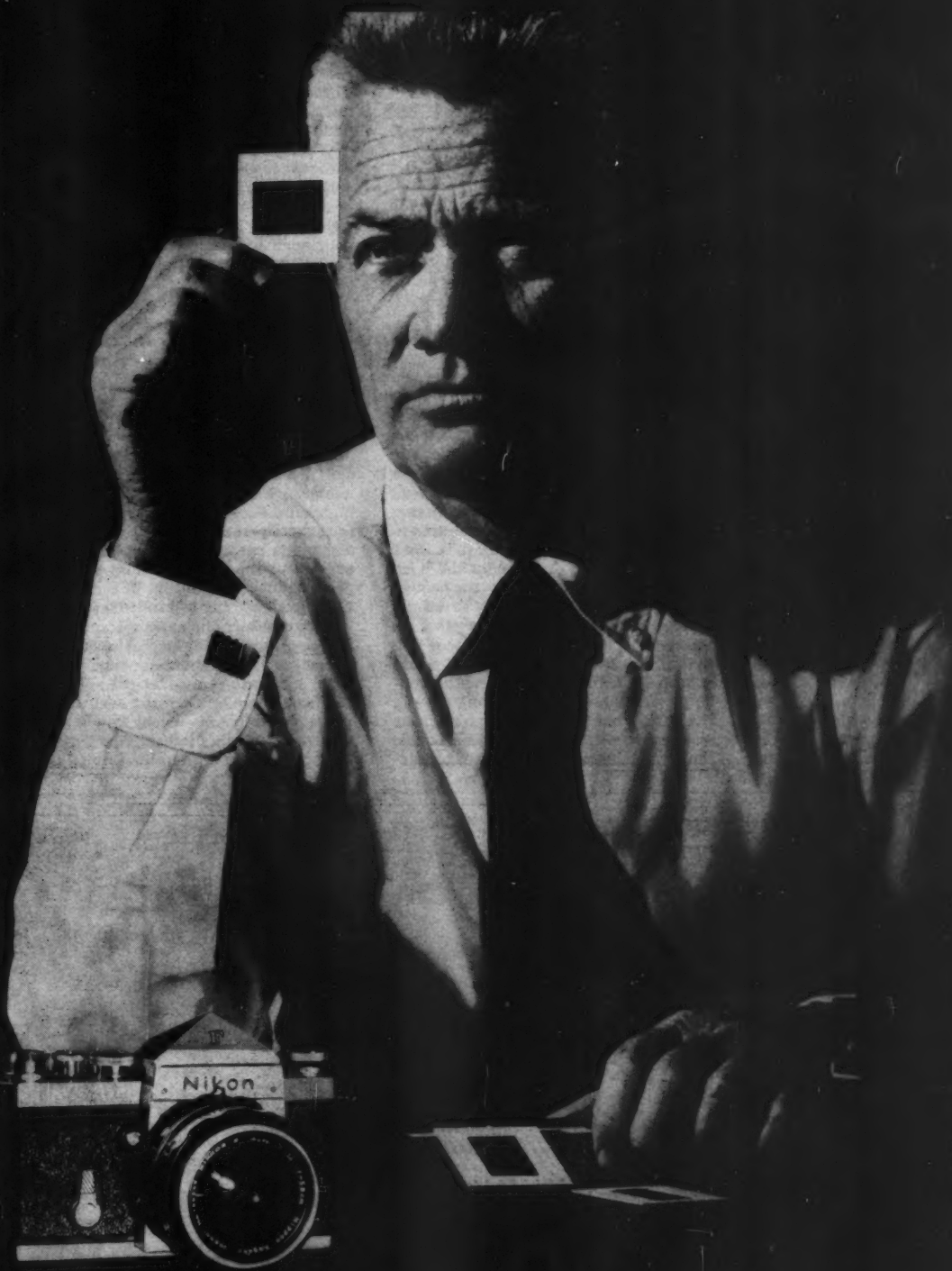
We tried cementing the glass to the frame, but the glass simply rested on the wet cement and, when dried, still impeded the free flow of the needle. Efforts at disassembling the meter proved futile; Weston meters require a special tool for disassembly. A call to Tehran assured me that England was the closest spot for Weston repair. I realized the only way I could repair the meter would be to affix some sort of suction cup to the glass, apply the cement, and pull the glass away from the needle. And in Iran, where does one find a suction cup? I finally decided to ship the meter to England and hope my shots for the next two or three weeks (if lucky) would be close in exposure. To insure no further damage to the needle I decided to affix the glass away from it with a piece of Scotch tape during shipment. Lo and behold! There was my solution! I realized in this suction-cup-less land, I could stick Scotch tape on the window, apply glass-metal cement around the edges, then pull the glass tightly into the cement with the Scotch tape! The meter then worked perfectly.

While this lucky accident doesn't particularly flatter my deductive intelligence, I pass it along as a hint on temporary repair for broken exposure meters when away from reputable repair stations. All apologies to Weston, Inc.

Iran.

Donald P. Horst






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TECHNIQUES TOMORROW

by BENNETT SHERMAN

A machine for making aspheric lens surfaces points the way to better lenses at reasonable prices.



No lens can be perfect. Even with an ideal design, the resolving power would be limited by diffraction (see this column, February 1961). The effect of diffraction increases as the lens is stopped

down: in a good-quality 50mm focal-length lens for a 35mm camera, the resolving power is reduced to less than

50 lines per mm at $f/32$ (which is one reason why very few of these lenses stop down further than $f/22$).

However, considerable improvement is possible toward the other end of the aperture scale. In today's lenses, when the opening is $f/4$ or faster, various aberrations take their toll of the image, one of the most important being spherical aberration. This means that light rays from the outer edges of the lens, or zones of the lens far from the center, do not come to the same focus as the rays going through the lens close to the center. Optical engineers recognize that this is the direct result of using spherical surfaces in the lens components. Astronomers have long known that the spherical lens (or mirror) causes a loss of sharpness. As a result, the large telescopes have lenses or mir-

rors which are not sections of a sphere. These large instruments use parabolic mirrors and their lens surfaces are hand-finished for perfection.

Well, you may ask, why does the camera lens manufacturer use the spherical surface? To understand one of the most important reasons, try this experiment. Take a tennis ball and a coin such as a quarter. With a soft pencil, trace out several circles with the coin on the surface of the ball, placing the circles close together but not touching. Now, imagine that each circle on the tennis ball is one of the two surfaces of a small camera lens. You can see that all of the little lens surfaces have exactly the same curvature, that is, they are all part of the same ball surface. This means that for spherical surfaces, the lens manufacturer can mass-produce many lens components at the same time, thus getting higher production and lower cost. This is the main reason why the spherical surface is used, even though it either causes aberration and loss of lens performance or entails the careful, complex designing of multi-component lenses to reduce that aberration.

Many optical engineers have tried to devise lens-grinding machines which could generate non-spherical surfaces on glass lenses quickly and accurately. However, only in recent years has there been much success. The Perkin-Elmer Corp. of Norwalk, Conn., has



STOPS

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been making aspheric lens surfaces of high accuracy, but not at a rate of production which would attract the manufacturers of popular-priced lenses. Other companies, such as the Elgeet Optical Company of Rochester, have made some fast lenses where the aspheric surface is put on a separate lens component and added to the regular components in assembly.

Recently, the Bell & Howell Company engineers, under the direction of Arthur Cox, grappled with the problem of making aspheric lens surfaces quickly and accurately. At the recent meeting of the Optical Society of America, Dr. Cox gave a progress report on Bell & Howell's work in this field. He described a remarkable new machine that may solve the problem.

It's done by a two-way movement

In overall appearance, the machine looks like a large letter T formed by two perpendicular precision machine ways. A motor-driven spindle is mounted on a carriage which rides the machine way forming the top of the T. This spindle carries the rough-ground lens component as a disk, and can rotate the lens disk about its center just like an ordinary wheel. On the other machine way, which is the upright of the T, is mounted a double carriage holding a small, very high-speed, diamond-dust-charged grinding wheel.

If the lens carriage is moved along

its way, the point of contact between the high-speed grinding wheel and the lens disk would move from the center of the lens toward the rim. If, now, the high-speed grinding wheel is moved forward on its way, it will press against the lens disk and grind into it. The double carriage of the grinding wheel is fitted with a super-accurate measuring device, which is used to control the depth of the grinding. The movement of the lens carriage controls the cutting distance from the lens center.

Thus the Bell & Howell engineers have a machine which can be very accurately controlled to produce any special, or aspheric, surface on the lens element. To finish the lens surface, it is subsequently polished with a flexible polishing tool, which preserves the special surface ground into the lens. One of the more remarkable details of the Bell & Howell machine is that the diamond-dust grinding wheel produces a surface on the lens so fine and smooth that it can be polished in 15 minutes, about one-fourth to one-eighth the normal time. Moreover, the Bell & Howell machine is automatically operated by means of a computer-control system so that, once set up, it operates rapidly and repeats accurately.

This development can mean the manufacture of lenses with higher speed and performance at a price that may be competitive with the lenses we now see from abroad.—THE END

New Booklets

ALL ABOUT CLOSE-UP PHOTOGRAPHY, Spiratone, New York. 30 pages, illustrations and diagrams. 35 cents

Here's a booklet for the close-up photographer working with a single-lens reflex, twin-lens reflex or range-finder camera. It contains descriptions of close-up terms, accessories, problems and their solutions, as well as charts, tables and guides on exposure, coverage, magnification and extension.

VACATION EUROPE WITH YOUR COLOR CAMERA, Eastman Kodak Co., Rochester, N. Y. 68 pages, illustrated. 50 cents

Planning a trip to Europe? This informative booklet is packed with hints and suggestions for a successful picture-taking journey. In addition to the usual sections on "what to take with you" and "correct exposure" there is a comprehensive listing of photographic musts from Italy to Ireland. Also included are chapters dealing with customs regulations, local picture-taking restrictions, and how to ask permission to take a photograph in nine different languages.

S and LOCKS OUT mistakes

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Otherwise, you can't!

The Kodak Retina Automatic III Camera puts on the brakes for you. The shutter release locks, the word STOP appears in the viewfinder if the light is too dim or too bright for the shutter speed you've selected. These two polite, but firm, signals are your cue to try a different shutter speed or flash.

But if you intentionally want to under- or overexpose, you can. Simply switch from automatic to manual operation and boss your own exposure, choosing your own combinations of lens and shutter settings.

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New Photo Books

ELECTRIC EYE MOVIE MANUAL, by Ira B. Current, 123 pages. Amphoto, \$2.50*

In a sprightly written, extremely straightforward style, Current analyzes the movie camera and how it works, compares the various electric eye systems, highlights the pros and cons of the electric eye systems in general, and then proceeds specifically through all the cameras available giving full specifications and explanations of each.

He then proceeds to give direct information on how to care for an electric eye camera, how to test it, how to load it, how to use it. He covers all films, lighting situations and special effects such as fades, lap dissolves, double exposures and simple titling.

At the end there's a very comprehensive glossary of terms from "Aperture" to "Zoom lens."

Throughout the book Current displays the rare ability to explain tech-

nical concepts in terms simple enough for the novice yet sufficiently detailed to be of good use to the serious, highly advanced amateur.—H.K.

HAL REIFF'S GLAMOUR MANUAL, by Mildred Stagg, 121 pages, illustrated. Amphoto, \$2.50*

Hal Reiff, aided by the excellent writing ability of Mildred Stagg, describes the techniques he uses to make glamour photographs.

This book is crammed with Reiff's own tried and proven methods, including discussions on direction, make-up, fashions and props, the Bride and the Nude. Technical subjects, covered in four of the 12 chapters—"What Camera?" "What Film?" "How to Shoot?" and "Darkroom Magic"—leave much to be desired. They are discussed interestingly enough, but with a paucity of specific and useful

information. Unfortunately, this book lacks step-by-step (follow me) explanations in chapters such as "Direction," "Make-up," and "Fashions and Props." In addition, perhaps there should have been a detailed description of how Reiff made at least one of the many glamour illustrations reproduced.—E.M.

ELECTRIC EYE STILL CAMERA PHOTOGRAPHY, by D. X. Fenton, 128 pages, illustrated. Universal Photo Books, \$1.95*

Contains the usual information on camera care, picture taking hints, composition, mounting, etc., found in all camera guide books; includes practically none of the information necessary to intelligently operate an electric eye still camera. There is no comprehensive listing and description of specific automatics currently available, but the different electric eye systems are briefly described in the 12th chapter and specific cameras are mentioned throughout the text.—P.C.

OFFICIAL MIRANDA MANUAL, by the Amphoto Editorial Board, 124 pages, illustrated. Amphoto, \$2.50*

This is a business-like book. It opens with comparative descriptions of the different Miranda models, including the new Automex, and tells you how to handle them all. Then it examines the full

For the man who'll settle for



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line of Soligor Miranda lenses. The Miranda accessories and their use (bellows, -extension tubes, etc.) are wisely kept until the end of the book. In between comes general information and advice on exposure, black-and-white film, color, depth of field (with tables), picture taking techniques, and lighting.

The writing is generally clear and authoritative. My only complaint is that some of the functional illustrations could have been more helpfully grouped and keyed with the text.

—W.H.J.

PORTRAIT OF A SYMPHONY, text and photographs by Constantine Manos, 131 photographs. Basic Books, \$10

Constantine Manos, a 28-year-old freelance of enormous vitality and talent, has produced one of the best picture books this reviewer has ever seen. His subject: the world-famous Boston Symphony.

Many of the photographs were taken while Manos worked as the official photographer for the orchestra. Later, to complete the coverage, Manos made many trips back to Boston from his base in New York. Some of the pictures are superb. And even the others somehow seem much better than most photographs included in most picture books simply because they are needed to tell the story or balance the layout.

All of the pictures were taken by available light with 35mm cameras. But Manos used different lenses, angles, apertures and shutter speeds to produce a remarkably varied group of photographs. Actually, the variation goes far beyond the technical, for this photographer is sensitive to many kinds of human experience. His pictures cover every facet—in fact and in mood—of the symphony's experience, ranging from comic to profound.

Portrait of a Symphony is excellently paced. It is as though the element of time, so often—and so unfortunately—ignored in picture book planning, has been considered in putting it together.

In his foreword, Aaron Copland penned the following tribute: "The viewer who turns the pages of this book of photographs . . . may enjoy the vicarious pleasure of finding (himself) . . . alone in the presence of a great orchestra." To this we can only add that, even if the viewer is not a classical music enthusiast, *Portrait of a Symphony* will more than likely make him one.—P.C.

JOURNEY THROUGH THE ORIENT, by Martin Hurlimann, 339 pages, profusely illustrated. The Viking Press, \$15

Martin Hurlimann has probably produced more pictorial travel albums on more countries than any other photographer. Hitherto most have been char-

acterized by magnificent reproduction, excellent composition and splendid mechanical photographic technique. However, by and large his pictures were cold, barren, devoid of life. Somehow Hurlimann had generally succeeded in eliminating all human forms from his work. His vistas were wide, grand, empty, inhuman.

In any event, Hurlimann has turned over the leaf. His handsome new book on Lebanon, Pakistan, India, Hongkong, China, Japan and Thailand teems with Lebanese, Pakistanis, Indians, the natives of Hongkong, Chinese, Japanese and Siamese. The pictures are, as usual, technically excellent. Hurlimann's approach is more that of the interested tourist than the photojournalist in search of exciting, arresting images. Children, salesmen, sailors, natives are shown objectively. The pictures serve more as an accompaniment and explanation for the text than the other way around. Any student of the Far East would find the pictures fascinating, though photographers may be disappointed.

Hurlimann, the silent observer in all his books until now, has contributed a lucid, fact-filled text in a schoolmaster style. It lacks the enthusiasm and excitement of the sparkling, crackling introduction by Sacheverell Sitwell who, to my mind, might make one hell of a photographer.—H. K.

(Continued on page 48)

everything... Kodak Zoom 8 Reflex Camera

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MOVIE VIEWER

WILLIAM JOHNSON

The use of lenses, Part I: There's danger as well as delight in leaving the normal focal length.



What is the effect of panning with a wide-angle lens? With a tele, how easy is it to follow-focus on someone running toward the camera? The zoom is handier than the dolly; is it just as effective? These

questions (which I'll answer in detail later) hint at some of the problems of perspective and focus that make a movie photographer think twice before leaving his normal lens. I'm talking about feature films: in documentary work, the necessity of shooting in confined spaces (therefore a wide-

angle lens) or the unapproachability of the subject (therefore a tele) will often override other considerations.

If you discount these and other functional applications of non-normal lenses (including, of course, the use of long-focus lenses for portrait close-ups), the wide-angle is used more extensively in movies than the tele or the zoom. One routine use of this lens is to increase the sense of speed in shots taken with the camera mounted on a moving vehicle (the wider angle of view shows more foreground, and the foreground has the greatest apparent motion). But the attributes of the wide-angle that have lent themselves to the most creative cinematography are its great depth of field and its apparent elongation of perspective. Orson Welles in his *Citizen Kane* (1940) was probably the first director to make lengthy and highly dramatic use of these attributes. To take only two examples, there are the many scenes inside Kane's mansion Xanadu

where the vastness is amplified by the wide-angle lens; and in the scene where Joseph Cotten is writing his review of Kane's wife's dreadful singing, it is the wide-angle lens that heightens the tension of Kane's entry by making him appear very small in the distance and loom enormously as he approaches the camera.

Hitchcock and Huston are two directors who, like Welles, have exploited the dynamic possibilities of the wide-angle. The clearest example I can think of from Hitchcock is a scene in *Spellbound* where Gregory Peck, as the psychotic, comes downstairs with an open cut-throat razor in his hand. One shot shows Ingrid Bergman, as Peck's wife, standing petrified in the background, framed by a huge hand and razor in the foreground.

When John Huston uses the wide-angle he often has three distinct planes in focus, as in *The Red Badge of Courage*, where several shots include a close-up figure, more figures in the middle ground, and battle action in the background. Also, in this and other of his movies, he uses the three-plane composition in a compressed form to show, say, three characters talking: one close to the camera and to one side of the frame, the second a foot or two back and to the opposite side, and the third still farther back and in the middle. (Examples of this occur in the tent scenes of *The Red Badge* and the

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Stripe of magnetic recording material, $\frac{3}{100}$ " wide, is applied to edge of any 8mm film for the recording of sound. See your dealer for this Kodak Sonotrack Coating service.

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criminals' meetings in *The Asphalt Jungle*.) Huston can then heighten the dramatic appearance of the scene by having the characters move slightly toward or away from the camera, since the wide-angle lens will exaggerate their movements.

It can be light-hearted too

In contrast with all these somber or dramatic scenes, the opening wide-angle sequence of the recent USSR movie *The Cranes Are Flying* conveys the liveliness of two lovers by accelerating their movements toward and away from the camera. And the wide-angle's great depth of field is used for a thoroughly comic effect in the otherwise not-too-cinematic English short *The Running, Jumping and Standing Still Film*. A man appears in the distance, on top of a hill; then a hand appears from the left side of the frame, close-up and in focus, and beckons; the man starts to move toward the camera; the hand reappears, beckoning; and so it goes on until the man has arrived in front of the camera, at which point a hand enclosed in a boxing glove appears from the right side of the frame and fells the man with a blow on the chin.

The apparent perspective distortion of the wide-angle lens can be used for deliberate effect. Since it's possible to achieve something of this effect with a normal lens, I can't be too certain of

several examples that come to mind; but I feel pretty sure that Henri Verneuil used a wide-angle in *Lisbon Lovers* (recently revived under the title *Port of Shame*) to help make Trevor Howard look heavy and forbidding in his first appearance as the Scotland Yard detective. It was certainly a wide-angle that emphasized the sudden, frightening appearance of the escaped convict in Lean's *Great Expectations*, making the man's figure loom disproportionately over the countryside behind him.

An entirely different use of the wide-angle's distortion occurs in the recent French movie *Breathless*—and frankly I do not know whether this was deliberate or accidental. Anyway, it provides the answer to the first question at the beginning of this column. Director Godard *did* pan with a wide-angle lens, several times, across the streets of Paris, and as a result all the angles at the corners of buildings etc. seem to broaden out and then narrow down as they cross the frame. Amid the frantic, disjointed action of *Breathless* this peculiar illusion is not out of place—but generally, of course, it would be undesirable.

In fact, the danger of the wide-angle lens in most movies is that it may exaggerate the perspective too far beyond the point of realism. For example, whereas Hitchcock is safe because he deals with melodrama, Huston some-

times crosses the borderline. As far as realistic movies are concerned, a wide-angle shot makes the strongest impact if it leaves the spectator with the impression that the lens has shown him exactly what his eyes would see.

Next month I'll discuss the use of the tele and zoom lenses.

Around the releases

The Guns of Navarone (dir., J. Lee Thompson; phot., Oswald Morris; color; see photos on page 8) gives a thoroughly romanticized view of war, despite its efficient violence and two somewhat startling scenes (David Niven's outburst against the callousness of war, and the elimination of Gregory Peck's love interest). Thompson doesn't involve our emotions, as he did in the suspense thriller *Tiger Bay*: we can sit back and enjoy the succession of crises, knowing that the biggest stars will survive, the lesser stars will achieve death with honor, and the enemy will be done for. The spectacular scenes—the storm at sea, the final destruction of the guns, etc.—are excellent. Oswald Morris, who did the atmospheric black-and-white photography for *Look Back in Anger* and *Our Man in Havana*, here mutes the color into suitably wan or harsh tones.

La Verite ("The Truth," dir., H. G. Clouzot; phot., Armand Thirard; b & w) is an old wave director's answer

(Continued on page 50)

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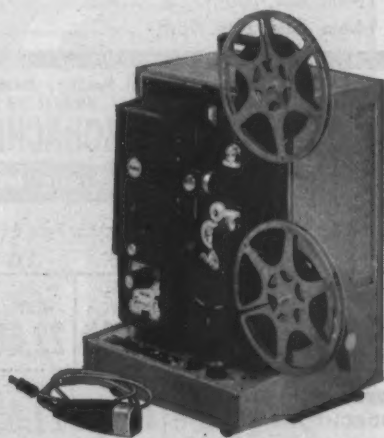
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played back through this projector's amplifier and speaker system will both startle and please you. An extremely durable alloy called Alfenol, used in the recording head, is the key to this quality. It is what has made quality 8mm sound finally practical. What's more, the superb fidelity of the sound recorded and played back by your Kodak Sound 8 Projector will remain uniformly good through countless playings.

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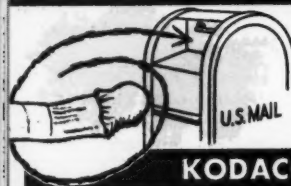


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BEHIND the SCENES

The great 70mm puzzle: Is this the ideal successor to roll film, and what's holding it up?

It doesn't take much thought to realize that modern camera mechanisms have made the film roll—the long strip of film attached to multi-numbered paper backings—as antiquated as flash powder. Even the less expensive plastic box-type cameras coming off the assembly lines scarcely require a look at the ruby window except for setting the first exposure.

You pay for a long printed roll of paper which winds up on the floor of the processing lab or your own dark-room. In addition, there's the labor cost of pasting the film to the paper.

The use of roll film can make your camera more costly too. Since the ruby window was discarded in favor of film

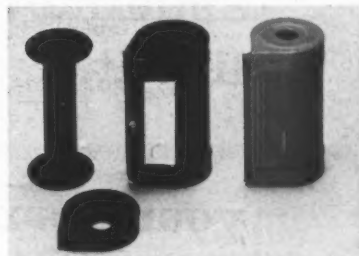
advance automation, complicated gearings of various sorts had to be built into the camera film advance. The reason? The spool itself could not be simply revolved a certain number of turns to advance film. As the film is wound on the spool, the diameter of the roll becomes thicker and the space between pictures increases markedly. To get even spacing, mechanisms must



70mm Kodak loaded cartridge (center) holds 15 ft., 50 shots, is twice size of 35mm (left), resembles it closely.

measure the linear film travel across the film plane.

The roll film camera owner has other causes to query the advisability of roll film. Unlike his friend with the 35mm camera, he can't remove a portion of the roll for processing, and he can't vary the number of exposures per roll by extending or shortening the film.



Linhof cartridge (center) is almost identical to Kodak (right) except for finish. Note sturdy spool, cap.

The ideal solution seems to have been reached in 35mm. Of course there was a valid original reason for the adoption of 35mm—it was already being used as movie film. But Leica inventor Oscar Barnack and others were quick to see the advantages of 35mm—it was widely available, could be cut in any length, had no waste aside from

(Continued on page 20)

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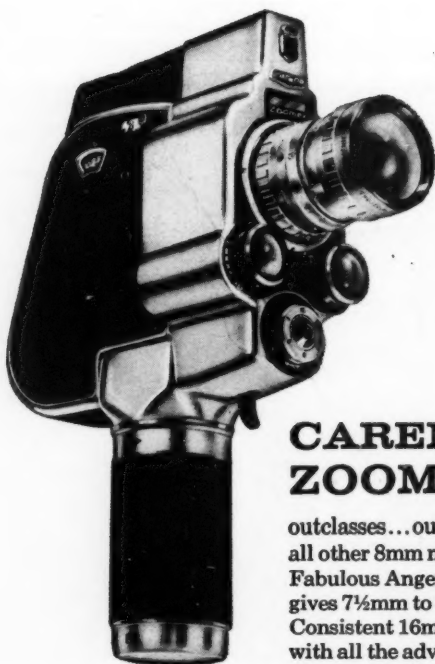
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BEHIND THE SCENES

(Continued from page 19)

a short film leader. Even the metal cartridge could be re-used. And one of the reasons the original Leica was so small was that 35mm film is perforated with sprocket holes. Sprocket wheels drive the film linearly across the film plane during winding.

Why not 120 sprocketed film in metal cartridges? In the two pictures on page 19 you see just that—70mm film sprocketed and in a metal cartridge much like an enlarged 35mm cartridge. The cartridge holds 15 ft. of 70mm film and makes 50 exposures 2¼ x 2¾. You can buy the cartridges loaded with Kodak Tri-X Pan, Plus-X Pan, Panatomic-X, Ektachrome Daylight Type and Type F, and Ektacolor. The films are also available in 100-ft. bulk lengths. In addition, 100-ft. lengths of Ansco Super Hypan and Supreme are also available.

The cartridge itself was originally designed for the Graphic 70, which looks and operates like an overgrown focal-plane shutter rangefinder camera. Although it has interchangeable lenses and automatic parallax correction plus a focal-plane shutter, the forbidding price of \$1,850 has excluded it from all except government work (for which it was designed) and industrial concerns (which can afford the money).

Standard non-standard cartridge

We were enthusiastic when Linhof introduced their 70mm film back for press and view cameras, a 70mm film loader, film tank and same sized cartridge. We felt that the swing to 70mm was perhaps underway. Further investigation reveals a rather complicated but heartbreaking (for 70mm fans) situation. Was this cartridge, made by Kodak and Linhof, standard? Yes, said Linhof. We quote Kodak:

"The 70mm cassettes are not necessarily standard. If a camera manufacturer decided to build a 70mm camera we hope he would contact us and we would work with him in determining the best possible cassette for his camera."

So we now have a standard non-standard cartridge fitting at least two different makes of cameras. Bulk loaders are available, reel-type developing tanks are available. Now what's holding up the 70mm Hasselblad back, the 70mm Bronica back and the whole field led perhaps by a 70mm Rolleiflex? Two problems. (1) Is this a standard cartridge or isn't it? (2) What film can you use and how much does it cost?

Film's available all right, but (a) it's four times the price of 120 roll film per shot in either color or black-and-white. For instance a 2¼ x 2¾ picture on 120 film (color) costs 5c per shot. It's 20c per shot in 70mm even if you buy the film in bulk and load your own. (b) Unless you want Tri-X or Plus-X, the minimum order is 35 rolls. Mini-

(Continued on page 48)

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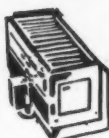
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35MM

by JOHN WOLBARST

How to choose a 35mm camera. Part 8: An overall look at the features of maximum range SLRs.

According to the "picture taking potential" scale outlined in Part 1 of this series (December 1960), 35mm single-lens reflexes with focal-plane shutters and interchangeable lenses are "maximum range" cameras. Although the class as a whole fully merits this rating, within the class certain types of cameras, and certain specific makes, are handier for general photography or can be used for a wider variety of picture taking purposes than other types. In some cases, these differences in picture taking ability are due to purely physical conditions.

Example: For certain specialized or scientific photography it may be very desirable (or necessary) to remove the eye-level prism and replace it with a plain magnifier so you can look at the ground glass from directly over the camera. However, if the camera's pentaprism is permanently attached, and if no right-angle eyepiece is available, such a use of the camera may be impossible.

Another example: You may need to take pictures involving the use of a lens of enormously long focal length. Perhaps the opening in the camera body is too small to accept such a lens without causing serious vignetting of the image due to intrusion of the lens mount into the light path. Or you may wish to use an ultra-wide-angle lens and there is none to fit your camera.

Final example: A camera may have such an inferior optical system that it is unable to make pictures of excellent technical quality.

In many cases, however, the differences in picture taking ability are due to conveniences (or lack of them) in the camera mechanism which make it particularly suitable (or un-) for certain kinds of work.

Example: It is very much easier to make a series of portraits or sports shots with camera-lens combination X that includes a self-closing and -opening diaphragm than with camera Y that lacks this automatic feature. The pictures made with X may be no better artistically than those made with Y, but they're made with much less effort and attention to purely operational details. And for the sports shots, the ability to work faster may make the difference between success and failure.

It is both normal and desirable that cameras should differ in their range of abilities, since not all photographers

have exactly the same picture taking aims and needs.

Unfortunately, this variety of SLR camera capabilities springs not so much from careful planning by manufacturers as from the speedy but haphazard development and blossoming of the basic eye-level SLR concept.

The result is a chaotic catalogue of cameras, most with certain similarities in basic design, but varying sufficiently in important respects to confuse all but the most knowledgeable.

Some ancient history

To understand the reasons for this it is necessary to go back to the first eye-level SLR, the Contax S, introduced in East Germany in 1950. On this camera the image was viewed on a not-very-bright plain ground glass; the lens diaphragm had to be opened wide for focusing and closed down for shooting by separate manual movements; after shooting, the mirror was brought back to focusing position by advancing the film.

Since that time the history of the SLR has been a record of designers' efforts to make the diaphragm and mirror movements more automatic, and to provide brighter, easier-to-use viewing-focusing screens.

New manufacturers have entered the field at various stages in the brief period of development of the SLR. Some of their products were almost obsolete in design to begin with and were quickly revised. To meet the competition, features were added to older models. As a result, the designs of a current group of brand new cameras on a dealer's shelf can present a historical cross-section of the growth of the SLR. The span is from the oldest 35mm SLR, the Exakta, which has had all sorts of features added to it to improve its performance, to such new ones as the Nikon F and Canonflex which were born with automatic mechanisms and optional features as integral parts of the design.

There is not necessarily a correlation between the number of features on an SLR and its quality, nor does the presence of many features guarantee that the camera will fit your picture taking needs. Some cameras which appear to be rather primitive and to lack most of the "desirable features" may in fact be at least as useful for certain important tasks as the most elaborate, feature-laden design available.

Solely for convenience of description I shall classify the SLRs, according to the number and variety of their features
(Continued on page 28)

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PICTURES in a **MOMENT**

by **JOHN WOLBARST**

Here's a test report on Polaroid's new J66 camera, an electric eye model for less than \$90.



Simplicity of operation is what Polaroid Corp. designers had in mind when they dreamed up the newly announced Polaroid Electric Eye Model J66 camera. I think they have certainly accomplished their aim. However, this is not the simplicity that is also accompanied by all the limitations of a box camera. Within the areas of operation for which it was designed, the J66 is a surprisingly versatile and accomplished picture taker.

The back half of this camera is the standard Polaroid design. It takes the large format (40 series) roll films. The front end is built around a modified version of the Photoelectric Shutter #440, which Polaroid Corp. has marketed as an accessory since late 1959. The shutter/lens housing is mounted on a pair of scissors frames to form what used to be called a "popout" front. As a result, the camera has a look distinctly reminiscent of some of the old German folding cameras of the post World War I era. But don't be fooled by this similarity.

There is some bold engineering in this design. This is the first amateur camera ever designed specifically to make full use of the abilities of 3000-speed film.

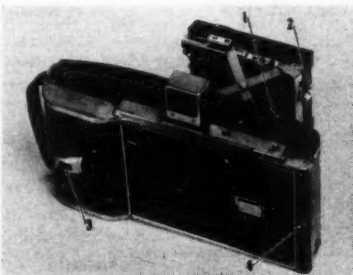
With such film speed, a large lens opening would be an embarrassment in bright sunlight. So the J66 has a novel single-element, 4½-inch focal-length lens with a normal aperture of f/32. I know of no other amateur camera with such a lens. A lighten/darken control gives an additional range from f/19 to f/64, but there isn't an f-number in sight.

The small lens opening makes focusing almost unnecessary. The J66 has only two focus settings. When you pull out the front of the camera it locks into position to cover everything from about 5 ft. on out. For closer work you pull the front out further to a second lock. This gives coverage from about 2½-3 ft. to 8 ft.

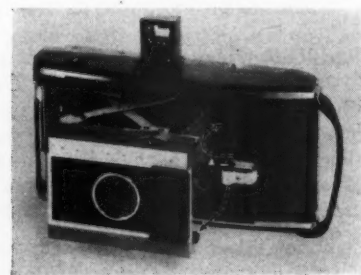
The electric eye is a selenium cell-galvanometer system coupled to a pneumatic retard control on the blade-type shutter. This combination produces continuously variable shutter speeds from 1/15 to about 1/1000 sec., all automatically. A low-light-level indicator over the shutter shows when it's too dim for pictures without flash.

I tested the accuracy of this system outdoors under a wide variety of conditions and was astonished at the performance. With the lens control set to "normal" I exposed six rolls of film

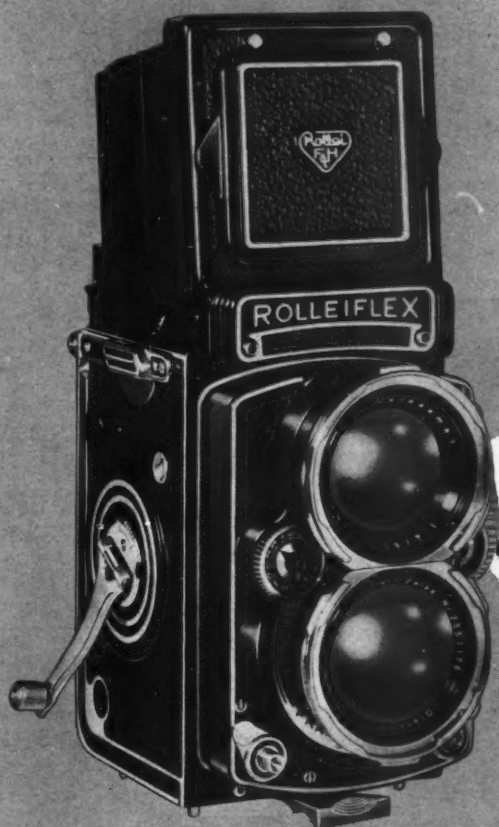
(Continued on page 28)



SIMPLIFIED CONTROLS: They're numbered in order of use. Red #1 is shutter release; white #2 cocks shutter for next shot; blue #3 releases film; yellow #4 is cutter bar, which you raise to pull tab to start development. If you count 1, 2, 3, 4 and move the numbered controls as you do, you can hardly miss. The camera won't close if you've forgotten to push #2, so it's always ready to go when you pull the front out. Neat little system?



UNIQUE FLASHGUN: It's built in. When pulled out all the way, as shown, it's in proper position for bounce flash horizontal shots; pushed in all the way, it's set for verticals. Or, it can be left at 45° position and used for either horizontal or vertical pictures. Then it's necessary to turn lens control partway to "lighten." Battery is tucked away under edge of camera body (top arrow), should last for two years, is easy to replace if and when it quits.



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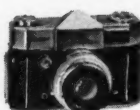
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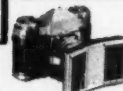
Steritar B Close-up 2 1/2" to 8" 39⁵⁰

Steritar D for Contaflex Alpha,

Beta, Prima and Contina 24⁵⁰

Stereotar C for Contax II, III,

IIA & IIIA with Prism & Viewer 69⁵⁰

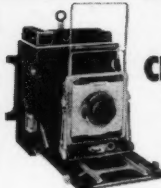


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128⁰⁰

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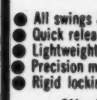
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Sanyo R, 3-lens Turret F1.9.....used 36.50
Sanyo-Movimat.....used 114.50
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1/2" Wollensak F1.9.....NEW 9.95
1/2" Wollensak F2.5.....NEW 12.95
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Elget Synchroflex Electric Eye lens for all 8mm camera F1.9.....used 14.95
Vidacope Wide 8mm.....used 7.50

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B&H 70DE, Turret, F1.9, 100'.....used 99.00
B&H 70DR, F1.9, optical finder.....used 188.00
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B&H 200EE, F1.9, Electric Eye Mag.....used 114.00
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Cine Special II, F1.9.....used 35.00
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Pathe 16, F1.9, 3-lens Turret.....used 184.75
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Keytone A-82, 750W proj.....used 79.50
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PICTURES IN A MOMENT

(Continued from page 24)

(48 pictures) and not one was an unacceptable exposure. Some were of such a nature that someone might have wanted them to be a trifle lighter or darker, but there was none which had to be made over. By turning the control all the way to "lighten" it was possible to make good pictures against the light.

Incidentally, there is no provision for a time exposure with this camera, no cable release connection, no self timer, no outlet for connecting an electronic flash. Polaroid engineers felt that such frills didn't fit in with the purpose of this design.

Note for those who think to the future. In announcing the camera Polaroid Corp. stated that it would be able to handle a future color film.

Indoors, the J66 is meant to be used mainly for bounce flash pictures. For this purpose there is a folding flashgun built into the camera which successfully defies all previous conceptions of what a flashgun should be, particularly one for bounce flash.

It's only a bit bigger than the AG-1 bulbs that it shoots. I have made countless thousands of bounce flash pictures, with all kinds of equipment. Never have I gotten such good results, so easily, as with the tiny gun on the J66. This is truly an outstanding development in flash photography technique. It is also possible to make direct flash pictures. With the gun in that position, the results are no better, no worse than those made with any other camera and gun.

I was surprised to find that even without the flash the camera had a good operating range indoors. Where bright daylight streamed in a window

directly onto the subject the electric eye produced good exposures. Under the big banks of fluorescent tubes which are common in offices, and with the lens control set all the way to "lighten," I turned out excellent available light pictures easily.

The lens needs some explanation. It is a single meniscus type with an extremely steep curved surface. Because of its relatively short focal length it acts as a semi-wide-angle lens. As a result, unless you hold the camera very straight and level, vertical and horizontal lines near the edge of the picture will converge and diverge sharply. I made some careful tests on brick walls and found that these linear distortions could be virtually eliminated by holding the camera level and placing the center of the subject directly in the center of the viewfinder, head on.

I did not find the distortions objectionable when snapping people, except when I aimed the camera down sharply at seated groups. Then I got the bent heads I usually get when I make similar shots with a wide-angle lens on my 35mm camera.

The lens seemed to be adequately sharp for its job, which is to make Polaroid prints that are usually viewed same size.

The folding viewfinder shows a bright frame around the field of view. Because I wear eyeglasses I could not always see the entire field within the frame at a single glance. This did not prevent me from getting good pictures. However, it could be a handicap to an eyeglass wearer trying to frame a group or scene carefully.

Aside from this, my only complaint about the J66 is that there's no provision for a lens cap. Polaroid Corp. says I don't need one, but I feel slightly undressed without it.—THE END

35MM

(Continued from page 22)

tures, into four rough groups: (1) basic; (2) upgraded; (3) advanced; (4) deluxe. These may overlap a bit.

A typical basic camera would be on the style of the early East German models. It has a plain ground glass, viewed only through an old style waist-level finder, or a permanently attached pentaprism; it lacks even the most simple automatic features, such as a self-closing diaphragm; nothing has been added to make it easy to use.

Such a camera may be satisfactory for a scientist who wants to couple the body semi-permanently to a microscope, telescope, or other instrument; for a specialist in copying paintings; for microfilming thousands of old documents; for other purposes in which facility of use and speedy operation are unimportant.

But for everyday picture taking such a camera will prove frustrating because of the difficulties in focusing and operation. Therefore, unless the

overwhelming majority of your picture taking is of the specialized type I have outlined, cameras of this type are, in my opinion, poor buys no matter how low the price.

Having dispensed with the cameras that lack all features of convenience, I shall in future columns discuss in detail some of the many SLR features available in terms of how they may help to satisfy your picture taking needs.—THE END

DO IT, DO IT, DO

WAIST-LEVEL ACCESSORIES. If you do a lot of hiking in the course of your picture taking, you'll find that an ammunition belt with a few canvas bags attached will provide an easy means of carrying camera, film, filters and other small accessories. You'll find these belts at most U.S. Army surplus stores.

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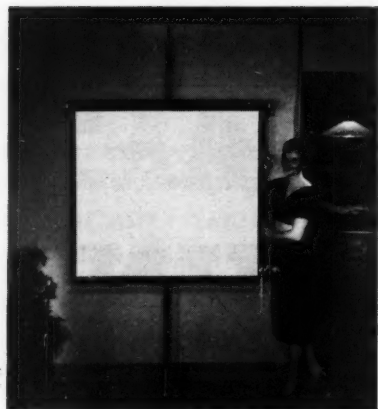
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Da-Lite Screen Co., Inc., Warsaw, Ind.

the MOVIE MAKER

by MYRON A. MATZKIN

Hold audience interest in your summer movies by building sequences to the "startling image."



The brutal truth is that summer vacation movies can be monumental bores to everyone but the people in them. You may get a special private thrill out of seeing yourself in front of Grant's tomb—but few others do. Yet there's absolutely no reason why your vacation movies—using the same material—can't be highly entertaining through several home showings. Unfortunately, many movie makers approach summer filming as a form of accounting—"we were here, we did this, and we saw that." Almost everything is shot from the same angle and subject-to-camera distance. Even scene time has a tendency to be the same from shot to shot.

The easiest way to break out of the pattern of static record shots is to vary the camera-to-subject distance—long shot, medium shot, and close-up. First, this will add pace and variety to your films. Second, it will give a more complete view of the subject. Even if you use a variety of lenses, vary the camera-to-subject distance, angle and screen time of each shot.

More important, look for and build up to the "startling image"—the shot in the sequence that's the real audience stopper. One outstanding shot in a sequence adds immeasurably to its overall value.

You needn't travel to exotic locales for the "startling image." You'll find it no matter where you take your vacation—in the country, at the beach, or in the city. Let's take a look at some of the movies you are likely to be shooting this summer.

In the country: The great pastime in the country is taking a walk. Almost every summer movie has at least one sequence of people strolling a rural path. Taking individual close-ups of people, rather than being content with a long or medium shot, makes the sequence more attractive. Still, there's more you can do to show the full meaning of the walk. Your strollers stop,

one looks down. You then cut to a close-up of a flower. You can use a zoom lens, with a maximum of 30 or 40mm for 8mm or 85mm for 16mm to fill the frame with a fairly large blossom. Start the shot from behind the stroller, then zoom to the flower.

But don't restrict yourself to looking down for the startling image. A cut to a cow—particularly for a city audience—can be effective. Use your tele or zoom lens for bird shots, too. This way, you turn a simple stroll in the woods into a strong, story-telling sequence.

In the city: Most tourists spend the major part of their time shooting buildings, monuments, and statues. Usually, there is a tiny image of someone standing in front of the main subject. Here's one way to build a better sequence, and show your companion to best advantage at the same time.

Shoot small details

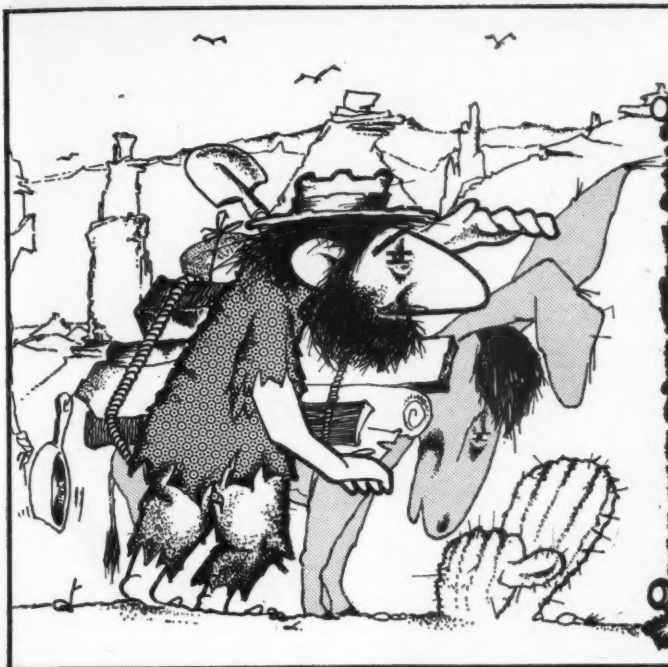
First shoot a long shot of the statue or building. Then cut to a close-up of the person you want in the sequence. Compose the shot so that some part of the building or statue shows up in the background. A wide-angle lens is good for this type of shot. As you shoot, have the person turn to look at the building or statue. Then shoot a close-up of some interesting detail in the building. This detail shot is the startling image, the one toward which you build. The detail might be a fountain, for example. In that case you could cut to an extreme close-up showing only the spray.

Amusement park sequences can be shot with more impact if you actually take your camera along for the ride. Choose an amusement where shooting is safe. Intercut the shot with others showing people on the ride itself.

At the beach: One of the commonest beach shots is of youngsters building castles in the sand. Here you might try shooting a close-up of hands at work, facial expressions, and finally the tide coming in to destroy the castle. Shots of crabs scurrying along the edge of the water can be intercut, too.

Those swimming shots can be made more interesting if you add a simple underwater sequence. All you need is an inexpensive rubber camera bag with a window for the camera lens. Since the shot will be brief, you don't have to invest in expensive equipment.

(Continued on page 32)



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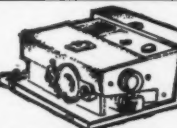
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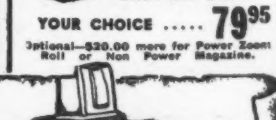
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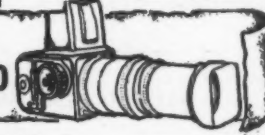
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COFFEE BREAK

(Continued from page 8)

who seem to shoot quite at random, even when one of their colleagues is standing right in front of the lens, and whose cameras contain an inexhaustible supply of film. And finally, describing a darkroom session in *A Burnt-Out Case*, Graham Greene makes the image appear in the hypo!

ONE MINUTE, YEARS AGO . . .

One of our readers, Paul Helmick, of Corvallis, Oregon, has sent us a clipping from *The Saturday Evening Post* for May 24, 1913, which features an ad for a "new one-minute camera" manufactured by the One-Minute Camera Co. of Chicago, Ill. According to this ad (whose print is too small for us to reproduce it here), the camera "weighs only 40 ounces" and "does everything. You just 'snap the picture' and in one minute it is completely finished. The photos are taken *direct on the postcard*. No plates or films—no printing or darkroom!"

The price of the camera is listed as \$10. If you threw in an extra dollar, you'd be sent "enough material to take and finish 50 postcard photos."

We assume that the one-minute camera worked on the same principle as the old-style street photographers' cameras, with built-in receptacles for processing solutions into which the exposed paper could be dipped (the image being reversed, of course, to yield a positive print). We did try to get more definite information. Since Mr. Helmick had sent us the clipping as casually as if it had appeared last week instead of nearly fifty years ago, we wrote off just as casually to the One-Minute Camera Co. Our letter was returned by the Old Post Office Station, Chicago, marked "Unclaimed." It seems that Polaroid Corp. no longer has a rival in the Middle West.

(P.S. We'd be glad to hear from any reader who ever owned, handled or saw this camera, or can give us more information about it than the Old Post Office Station, Chicago.)

MOVIE MAKER

(Continued from page 30)

A diving mask, fins, and a snorkel tube are all the other equipment you need. Shallow water provides the best lighting conditions, so you won't even have to dive. Instead, lie on the surface, and point the camera down. For manually operated machines, open up the lens one-half f-number more than the surface reading for every 5 ft. of water depth. Your electric eye camera on automatic should give adequate results.

The shot can be spliced after one showing the family diving into the surf.—THE END



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Exhibit: August 30-September 10

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Slides: August 15

Exhibit: Prints: October

Slides: September 15-21

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Closes: August 10

Exhibit: September 16-24

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Box 268, Penang, Malaya

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Exhibit: September 9-October 7

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Entry Forms: The Hon. Secretary,

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26-27 Conduit St., London, W.1.

*14TH MAGIC EMPIRE COLOR SLIDE EXHIBIT, Tulsa, Oklahoma

Closes: September 15

Exhibit: October 16-17

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ULTRA MINIATURE

by **JOSEPH D. COOPER**

Got shooting problems? The commercial processors analyze some common picture taking mistakes.



You can learn a lot about picture-taking from the developing and printing laboratories that specialize in ultraminiature work. I queried a representative group, asking each person to whom I

talked to identify the principal reasons for picture failures.

At **Berkey Photo Service**, I talked to Samuel Simon, executive vice president, who suggested that high-speed films such as Tri-X were not suitable for ultraminiature work. "Another problem we encounter is with reloaded cartridges. Many people load their own carelessly, causing fog, abrasions, scratches, etc. They load longer lengths than the cartridge will hold, causing excessive cinching as the film is wound through the camera. Both color and black-and-white come into our lab in incorrectly marked magazines. Where some film is visible we can determine the proper type. In many cases, however, the film is processed incorrectly—unavoidably."

Don D. Thayer of **Minox Processing Laboratory** reported that "The finger in front of the lens is still our biggest complaint. Although the Minox has an extremely great depth of field, people frequently don't adjust for it properly by setting the correct distance on the dial. In flash photography, a common error seems to be that pictures are taken at too great a distance from the subject, beyond the proper exposure range of the flashbulb."

At **Perfect Photo Service**, Roy Thomas of the Sales Department said: "The only two errors I find repeated over and over again are fingers placed in front of the lens and incorrect exposure. Also, a number of people request prints in sizes beyond the capability of their negatives."

William Corvelle of **Towne Laboratories** commented: "We find overexposure common in outdoor scenes as well as in flash photography. In the

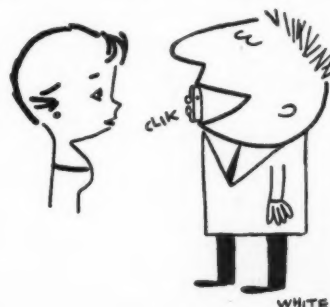
latter case, the most frequent error is the burning up of foregrounds. People think that the tiny AG-1 bulbs don't have much power. They have all the power you need. Other common errors result from fingers held in front of the lens, incorrect focus, not holding the camera steadily, and using too slow a shutter speed."

At **Warren Processing Labs**, Bud Warren advised "greater care in holding the camera so that the fingers are not placed in front of lens. We cast our vote against the use of Tri-X, which results in extremely grainy prints. Finally, it seems obvious that people with cameras having built-in exposure meters are not taking their readings close to the subject. If the exposure reading is taken from the shooting position, the reading for the overall scene may be incorrect if you want proper exposure for the main subject."

The summing-up

Most of the comments given above are self-explanatory. Particular attention should be given to the finger problem. When you practice holding the camera, you should assign a definite place to each finger. In this way, a stray finger is not apt to cover the lens when you are hurriedly taking a picture without time to think about such things.

Film processing laboratories vary in their processing techniques. You should settle on one photofinisher and stick with him. If your films come back showing consistent underexposure, use slower shutter speeds or wider lens apertures. If your films show consistent overexposure, try faster shutter speeds or smaller lens apertures.—THE END



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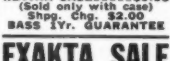
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Protecting your slides, Part 1: What to do if your projector doesn't accept glass mounts.



Are you neglecting your transparencies, leaving them exposed to dust, fingerprints, scratches and buckling? Glass is a sure method of protection, but what do you do if your projector doesn't accept

glass mounts? There are several other ways of protecting your slides if you can't glass-mount them, so you really have no excuse for not giving them adequate protection. Here are three possible solutions.

1. *The Kimac Protector.* This is a thin acetate sleeve into which you can easily insert a slide (and remove it when you want). Since both ends are open, you should seal the ends with transparent cellophane tape so that your slide is completely covered and free from dust. However, the slide sits loosely in the sleeve, and is not fully protected from buckling caused by hot projectors. Because the slide is made larger by the covering, it can cause jamming in some machines. Better try one acetate sleeve on a discarded transparency before buying a whole supply of Kimac Protectors. The Kimac Protectors cost \$2.72 per 100 for 2 x 2 slides and \$4.00 per 100 for 2 1/2 x 2 1/2. For further information write to the Kimac Co., 18 Mortimer Dr., Old Greenwich, Conn.

Dip and dry

2. *Miracote.* This is a plastic protective solution into which you dip each slide (cardboard mount and all). You then hang the slides up to dry. A hard coating forms, covering minor scratches and protecting the slides against surface damage and fungus. Because the slide is rigidly held, it can't pop under the heat of your projector. However, once on, the slide cannot easily be separated from its mount—something to keep in mind if you should want to print any of your slides at a future time. Miracote costs \$1.98 a jar and each jar provides coating for 250 slides. For further information write to Foralco Enterprises, 307 W. 38 St., New York 18, N.Y.

3. *Thin glass mounts.* Each piece of

glass is only 3/32 in. thick and will fit the slide trays of many projectors that won't accept regular thick glass slides. (Airequipt and Argus projector trays have individual metal hangers in which the transparencies must be placed. These hangers are far too narrow for ordinary glass-bound mounts.) You can use the thin glass by removing the slide from its cardboard and placing it in a paper mask. You then slip the mask between two pieces of glass and insert the new mount into the metal hangers. Don't tape the pieces together since this will make the glass-mask sandwich too thick. If you use thin glass mounts you can use various sized masks to crop your slides for more interesting or better compositions. Standard size masks are available from Eastman Kodak. Masks of

Daguerre?

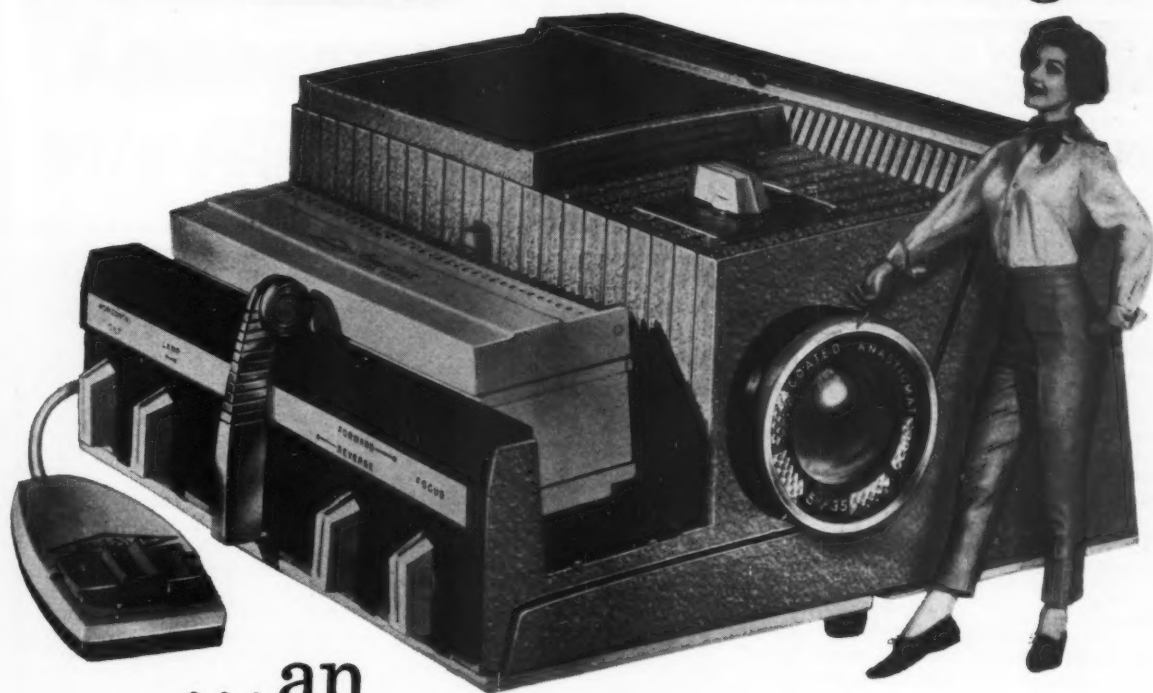
"A Chinese lecturer at the University of Hong Kong claims to have found traces of china plates made sensitive to light by a chemical process 2,000 years ago. These plates, he says, might have been turned into negative pictures if used in combination with a camera obscura. He argues, therefore, that the main principles of photography were known in China 2,000 years ago."—From the Focal Encyclopedia of Photography.

other sizes and shapes which fit the thin glass mounts are made by Gemounts, 26705 Curie Ave., Warren Michigan; Porter Mfg. & Supply Co., 2836 Sunset Blvd., Los Angeles 26, Calif., and the Kimac Co., 18 Mortimer Dr., Old Greenwich, Conn.

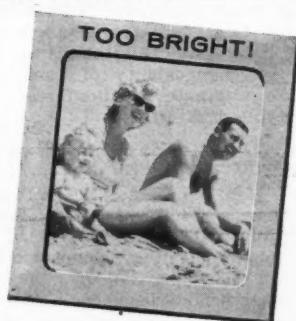
Thin glass made by Airequipt costs \$1.95 for 75 pieces (the odd piece is a spare in case one breaks). Complete thin glass mounts are offered by these companies: Graflex Inc., 3750 Monroe Ave., Rochester 3, N.Y. (Graflex Slide Binders); Erie Scientific Corp., 693 Seneca St., Buffalo 10, N.Y. (Essco Binders); Emde Products Inc., 2040 Stoner Ave., Los Angeles 25, Calif. (Emde Binder); E. Leitz Inc., 468 Fourth Ave., New York 16, N.Y. (Pro-Color Binders); Karl Heitz Inc., 480 Lexington Ave., New York 17, N.Y. (Filmsto); and the Airequipt Mfg. Co., 20 Jones St., New Rochelle, N.Y.

Next month I'll discuss methods of protecting slides with regular glass mounting.—THE END

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the LARGE CAMERA

by **ANDREAS FEININGER**

Staff Photographer for *Life Magazine*

Three new precision view cameras,
Part II: their characteristics, differ-
ences and similarities.



One thing that impressed me immediately about the Peco Junior, Peco Universal III and Super-Cambo was the superb quality of material and workmanship, equal in every respect to the finest

35mm and 2 1/4 x 2 1/4 cameras—and this at prices that are realistic, competitive and fair.

These view cameras represent two distinctly different types. The comparatively small Peco Junior seems specifically designed for the traveling photographer intent upon reducing the weight and bulk of his equipment without sacrificing quality and rigidity. This feat was accomplished by shortening the monorail by approximately 7 in. (it still permits 12 in. of bellows extension and the use of tele lenses with focal lengths up to 15 in.); reducing the lensboard to 4 1/4 in. square as compared to the 6 1/2 in. square of the Peco Universal III; and slightly miniaturizing all the controls. In contrast, the Peco Universal III and the Super-Cambo are primarily designed for work in the studio, where weight and bulk are no disadvantage. Although the Peco Junior is undoubtedly one of the strongest and most rigid view cameras ever designed, the other two are even stronger.

A further difference is that the Peco Junior is conceived as a unit whereas the Universal III and the Super-Cambo represent complete systems. Accordingly, modifications of the Junior are restricted to interchangeability of lenses (from 65mm wide-angle to 15-in. telephoto), bellows (a special soft bellows for use in conjunction with extreme wide-angle lenses and full utilization of swings is available as an accessory), and film holder adapters (in addition to the standard 4 x 5-in. back panel, reducing adapters for film sizes down to 35mm are available).

In contrast, the Peco Universal III and the Super-Cambo can be modified to practically any desired extent. For example, a photographer could start

by buying the standard 4 x 5-in. model. Then, if he needs a longer bellows extension for ultra-close-up work, he can add another section to the tubular rail of his Universal III, or acquire a longer rail for his Super-Cambo, and use this in conjunction with a second bellows and an intermediate frame. Later on he may wish to use a larger film size for color photography, perhaps 5 x 7 or 8 x 10. All he has to do is to acquire an additional 5 x 7 or 8 x 10-in. back standard with corresponding bellows and he is ready to shoot, using the standard 4 x 5-in. front.

Each of the three cameras is equipped with a full set of vertical and lateral front and back adjustments, swings and tilts. All swings and tilts are on the lens axis, so that no refocusing is necessary. In addition, the Universal III is equipped with a second set of tilts off the base rail, giving it unrivaled flexibility. All adjustments are provided with zero clickstops and most of them are precision-calibrated in millimeters or degrees. Other important features which all three cameras share are: interchangeability of lenses from wide-angle to telephoto; interchangeability of bellows; interchangeability of back adapters for alternate use of different sizes and types of film.

Some valuable extras

Here are some of the more desirable accessories for the Peco Junior and Universal III (at the time of writing, this information was not yet available for the Super-Cambo). The compendium bellows lens hood is fully adjustable, can be used with any lens of any focal length and costs \$49.50. Special wide-angle bellows for the 4 x 5, 5 x 7 and 8 x 10-in. models are priced at \$26.50, \$29.75 and \$44.50. The recessed lensboard with interchangeable lens panel for wide-angle photography in conjunction with the standard bellows costs \$14.50 (in this case, the stiffness of the tightly compressed bellows precludes the use of swings—hence the special wide-angle bellows). Two kinds of filter holders are available, each of which can be used with any type and size of lens; the holder for 3 1/2-in. glass filters is priced at \$35.25 and the holder for gelatin at \$25.50. There are three different roll film holders to choose from, for 2 1/4 x 2 1/4 (\$32.50), 2 1/4 x 3 1/4 (\$27.50), and 35mm (\$37.50). Additional lensboards are available for \$3.95 each.—THE END

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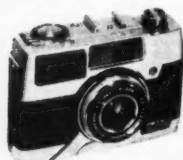
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NEW products

Information and specifications for the products here described are supplied by the manufacturer, and do not constitute tests by MODERN PHOTOGRAPHY.

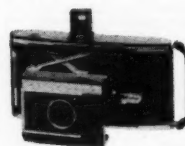
Single-Frame Petri



The Petri Compact E single-frame non-range-finder 35mm camera is equipped with a built-in and coupled exposure meter. It has a 28mm f/2.8 Oriskany lens and a Carperu SS shutter with speeds from 1/15 to 1/250 sec. and X sync. The meter has a range of film speeds from E.I. 10 to 800. You set the proper lens-shutter combination by aligning two needles which are visible in the viewfinder. Measuring 4 1/4 x 3 x 1 1/2 in., the camera weighs about 14 oz. Other features include: optical viewfinder with frame-line and parallax correction marks, film advance trigger on bottom of lens

mount, automatic zero resetting frame counter, zone focusing, and rapid rewind lever. The Petri Compact E costs \$49.95; case, \$6.95. Write: SERVICE PHOTO SUPPLIERS 33 EAST 17 ST., NEW YORK 3, N. Y.

More Automatic Polaroid



The Polaroid Electric Eye Model J66 camera is designed for use with 10-second 3000-speed film and features numbered push-button operation. A special lighten-darken control can be used to vary the aperture of the 4 1/2-in. lens from f/19 to f/64. Shutter speeds are controlled from 1/15 to 1/1000 sec. by a selenium cell exposure meter. The camera has a built-in flashgun for AG-1 bulbs, powered by a 1.5-volt battery (Eveready E91 or Mallory Mn 1500 recommended) located in the camera bed. The gun's reflector swivels for bounce flash. Other features: close-up setting for portraits as close as 30 in., low-light warning signal indicating use of flash in dim outdoor light, optical viewfinder with frameline,

and provision for use with Polaroid color film when it becomes available. Polaroid Electric Eye Model J66 sells for less than \$90. Write: POLAROID CORP. CAMBRIDGE 39, MASS.

Heiland 3°/21° Exposure Meter



To determine exposure with the Heiland Pentax 3°/21° meter, you first set film speed, from E.I. 3 to 6400, on a movable ring of the meter's lens barrel. To take a reading, point the viewing lens at the subject, and enclose the precise area of the reading in the circle in the center of the viewing screen. This circle defines the 3° angle covered by the cadmium sulfide

cell, which is powered by two 1.3-volt mercury batteries and one 22.5-volt dry battery. Press the button on top of the meter halfway down to measure light in the high intensity range, all the way down for the low range. An EVS number can be read from a scale in the viewing screen. This number is then set on a ring on the lens barrel, and the correct range of shutter-speed/f-number combinations can be read from the adjacent rings. Shutter speeds on the ring range from 4 to 1/4000 sec., f-numbers from f/1 to f/45. EVS numbers, which are for the 3°/21° meter only and cannot be transferred directly to cameras with EVS or LVS systems, range from 3 to 17. The viewing lens covers

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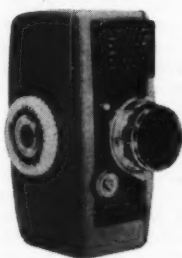
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a 21° field of view and the eyepiece of the reflex viewing system has 1.5X magnification. The Heiland Pentax 3°/21° exposure meter sells for \$79.50. Write: HEILAND DIVISION, MINNEAPOLIS-HONEYWELL 5200 E. EVANS AVE., DENVER 22, COLO.

Protek Print Holder

Protek Print Holder, a transparent yellow plastic device, is designed for coating and holding Polaroid prints. The 3¼ x 4¼-in. box is open at one end and has four grooves inside which hold eight prints, two each back to back. One side of the holder is used as a coating platform. Two hooks permit the holder to be clipped to the pocket. Protek Print Holder is priced at \$1.35. Write: BAR PRODUCTS CO. 4803 WHITE OAK AVE., ROCKFORD, ILL.

Coupled Meter on Konica Zoom II

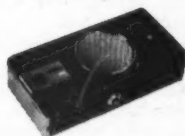


The V-Hexanon f/2 zoom lens on the Konica Zoom II 8mm electric eye movie camera zooms from 12 to 32mm, and with wide-angle and telephoto converters, its range is increased down to 6mm and up to 50mm. At normal and tele lengths, the lens focuses down to 2½ ft., and with the wide-

angle converter, to 2 in. Viewing and focusing are through the lens. The needle of the coupled exposure meter is visible in the viewfinder. To set exposure for films from E.I. 10 to 160, you move the control dial on the side of the camera until the needle is within a

triangle. The electric motor-driven camera, operated by four penlight batteries, offers a choice of 16, 24 and 32 fps with regular battery set; with remote control and booster unit—3 more penlight batteries—48 fps is possible. Other features: backwind, frame counter, internal pressure plate; and battery tester visible in viewfinder. The Konica Zoom II costs \$229.95; case, \$12.95. Write: KONICA CAMERA CO. 76 W. CHELTEN AVE., PHILADELPHIA 44, PA.

16mm Camera-Radio Combination



About one quarter of the area of the unit known as the Ramera is a 16mm ultraminiature camera equipped with a 23mm f/3.5 fixed focus lens. The

camera accepts 20-exposure daylight-loading film magazines. Size of the negative is 10 x 14mm. Shutter speeds range from 1/50 to 1/200 sec. and B, with X sync. Other features of the camera include: pull-type rapid film advance lever; automatic zero resetting frame counter; optical viewfinder; tripod socket; and shutter cock indicator.

The rest of the Ramera contains a 6-transistor radio, with a 2¼-in. speaker, which operates on a 9-volt battery. Price of the Ramera is \$39.95. Write: SERVEL SALES CO. INC. 1418 CORTELYOU RD., BROOKLYN 26, N. Y.

Autoelectric Projection Screen

Radiant's Autoelectric Compact projection screen, which is raised and lowered by a remote switch, is operated from any 110V AC outlet. An automatic mechanism stops the screen when

it is completely unrolled or fully rolled back into the case, or it can be stopped at any point in between. The screen, available in three sizes, comes in an aluminum case. Prices for the Autoelectric Compact projection screen: 50 x 50-in., \$139.50; 60 x 60-in., \$159.50; 70 x 70-in., \$179.50. Write: RADIANT MANUFACTURING CORP. P. O. BOX 5640, CHICAGO 80, ILL.

Illumination Control



ColorTru Converter permits using household 120-volt tungsten lamps, instead of photo flood lamps, for indoor color photography, by raising their color temperature to 3200K or 3400K. Up to nine bulbs

can be boosted 4½X while ampere consumption is just doubled. With special 4-in. diameter reflectors (M-4 Micro-Flectors), light intensity increases 6X. The unit operates on 120-volt 50 to 60 cycle AC and has two outlets for connecting lamps to the converter. An interlock on the operating switch lets you warm the lamps at their rated (120) voltage before the Converter is turned on. Pushing one of two buttons gives you the desired Kelvin level. Maximum current input is 15 amps. The device has a built-in handle and weighs 15 lbs. ColorTru Converter is priced at \$49.50. Write: NATURAL LIGHTING CORP. 630 S. FLOWER ST., BURBANK, CALIF.

Change of address: Yashica, Inc., has moved from 234 Fifth Ave., New York 1, N.Y., to new offices at 50-17 Queens Blvd., Woodside 77, N.Y.

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NEW BOOKS

(Continued from page 15)

HOW TO USE VARIABLE CONTRAST PAPERS, by Lou Jacobs Jr., 120 pages, illustrated. Amphoto, \$2.50*

Lou Jacobs is one of that rare breed—a professional photographer who sincerely enjoys locking himself up in a darkroom (to print). His explanation of how to use variable contrast papers is well done, informative, and, in most cases, well illustrated.

This book is not for darkroom beginners. It is for those who already make their own black-and-white prints with graded papers but would like to reap the advantages of variable contrast. Many excellent charts are included which eliminate much of the guess work necessary for anyone not experienced with the use of variable contrast.—E.M.

AMERICAN CINEMATOGRAPHER MANUAL, compiled and edited by Joseph V. Macelli, 482 pages. American Society of Cinematographers, \$7.50

While this book is specifically designed to meet the needs of the motion picture professional, it contains much that the serious amateur will find extremely useful. It should prove particularly interesting to the amateur who aspires toward film making as a

career and wants to know about professional 16 and 35mm techniques.

The book is divided into sections on cameras, films, lenses, exposure, black-and-white filters, color, lighting, background process, television and sound, and special techniques. A special section deals with formulas, conversion tables, electrical data, and other material of a similar nature.

For the serious amateur, the section on sound recording is quite useful, as is the section on the care and conditioning of movie equipment in extreme climates—tropical heat or arctic cold. Good solid information is contained in articles on day-for-night shooting (making a scene shot during the day look like a night shot), underwater cinematography, infrared cinematography, and makeup. (We're a bit puzzled, however, by the lighting contrast ratio chart on page 273. The headings seem to have been misplaced.)

Wide screen processes and how they differ are described clearly and concisely in the section on lenses. Depth of field, hyperfocal distance, and field of view are described in chart form for both 35mm and 16mm camera lenses.

The book is small enough to carry around in a gadget bag or hip pocket for ready reference.—M.A.M.

These and other books are available through AMPHOTO, 33 W. 60 St., N. Y.

BEHIND THE SCENES

(Continued from page 20)

mum order of Tri-X or Plus-X is six rolls. All the 70mm films are termed special order and may require a month or longer for delivery. Minimum purchase of Ansco film is 15 rolls of 100 ft. Thus, if you personally are footing the bill, the cost is astronomical. Why?

There is an additional cost factor. The cartridge is extremely well made and not designed for one-time use. The Linhof cartridge costs about \$5. The Kodak cartridge is not sold separately. Obviously some system must be set up to return cartridges to the maker much as empty 8 or 16mm movie magazines are returned now.

What would you do if you were a camera manufacturer knowing the advantages of 70mm? Is it worthwhile risking a fortune tooling up for a 2¼ x 2¼ camera for amateurs and professionals based on a logical cartridge which may or may not be standard, for which film is available at great expense and then only in carload lots? And beyond the film supply, how many finishers are ready, willing and able in such an iffy situation to set up processing for color as well as black-and-white? Meanwhile, how do you explain to an enthusiast for a Linhof back that he must buy 35 rolls of 50-exposure Ektachrome before he can take a snapshot of his wife?

For want of the film, there are no cameras. For want of cameras, there

is no film. Come, gentlemen of the industry, let's stop chasing our tails.

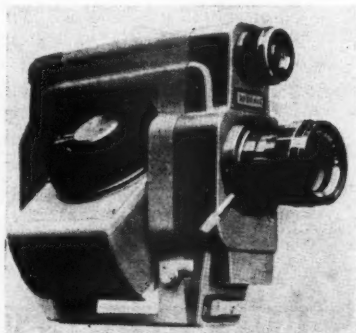
New ideas in 8mm

120 roll film isn't the only archaic film package. How long are amateur 8mm movie makers going to be happy shooting 25 feet and then searching desperately for a sufficiently shady nook to turn over the double-8 film spool for the remaining 25 feet?

We certainly can't expect film manufacturers to adopt single 50-ft. lengths of 8mm film. The film spool would require larger cameras and we've become quite accustomed to the neat, trim 8mm camera of the present.

A particularly ingenious solution seems to have been found by Sekonic in a yet to be shown Model 100 camera.

(Continued on page 86)



Sekonic 8: a camera that flips.

What could possibly make a camera worth \$550?

The work you can do with it, nothing else.

The precision and resolving power, for example, that have led many studio photographers to use a Hasselblad $2\frac{1}{4} \times 2\frac{1}{4}$ single-lens reflex instead of an 8 x 10 view camera.

The interchangeability of lenses, film backs and accessories—over 100 camera set-ups in all—that enables a professional to carry a Hasselblad instead of half his studio on location assignments.

The automatic aids that let the pro concentrate on his subject instead of the camera, and help the amateur make up in part for the intimate knowledge of light and optics that marks professional work.

Hasselblad lenses, for instance, make color and detail almost automatically perfect. These lenses have Synchro-Compur shutters and are made by Carl Zeiss of the best optical glass in the world. Resolving power—the acid

test of any lens—permits greater enlargements than virtually any other lens made today.

The Hasselblad reflex system alone costs more to make than many cameras sell for. On its ground glass viewer you see a print-size preview of the quality you will get—focus, depth of field right through the lens (and no parallax). A pop-up magnifier even shows details too tiny for the naked eye.

Diaphragms of Hasselblad lenses are automatic. They remain open until you shoot, so that your view cannot get away from you. If you wish, you can also stop the diaphragm down by hand.

The EVS system synchronizes diaphragm openings to shutter speeds. You simply set your lens for a code number and your speed and aperture will be automatically aligned. You can then change to any other speed and your aperture will change with it—automatically.

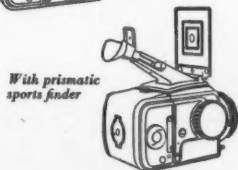
Hasselblad interchangeability? You can switch from color to black and white in mid-roll, or from telephoto to wide angle, or to a sports viewer, or to a magnifying hood for shots through a microscope. You can set up for almost every shot known to photography in seconds.

What could possibly make a camera worth \$550? The work you can do with it, nothing else. With Zeiss Planar f/2.8 80mm lens, \$549.50.

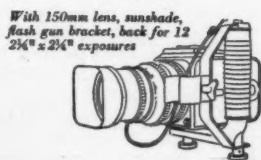
Write Dept. HMP-8 for literature and the name of your nearest Hasselblad dealer. PAILLARD Incorporated, 100 Sixth Avenue, New York 13, New York.



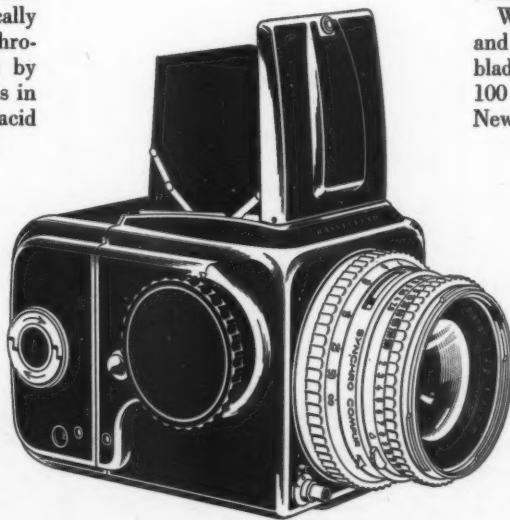
With magnifying hood, 60mm lens, back for 16 $1\frac{1}{8}'' \times 2\frac{1}{4}''$ exposures, exposure meter knob



With prism sports finder



With 150mm lens, sunshade, flash gun bracket, back for 12 $2\frac{1}{4}'' \times 2\frac{1}{4}''$ exposures



With 250mm lens, sunshade, exposure meter knob



With magnifying hood, cut film adaptor and holder



With 150mm lens, fast-wind handle, $2'' \times 2''$ superlide back

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Oh, that Automatic
MIRANDA 'D'

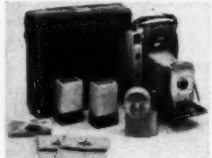
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EDOBASHI, NINONBASHI, CHUO-KU, TOKYO, JAPAN

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You can achieve overwhelming success with the proper choice of lenses. Lenses by their very nature, can make or break your photographic enjoyment. Therefore, great care must accompany your purchase of lenses.

A high quality lens is priceless. However, price alone does not determine quality. The inherent ability to produce razor sharp pictures, in both color and Black and White, is the final consideration.

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TO ROBERT'S

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☐ I own a Single-Lens-Reflex Camera. (insert camera & model)

☐ Please make recommendations on

() Wide Angle Lens () Close-up Work

() Telephoto Lens () Long Telephoto Lens

☐ I want to increase my knowledge on lenses for Single-Lens-Reflex Cameras. Please send me the facts on

"How to Select Lenses Properly."

Name

Address

City..... State.....

MOVIE VIEWER

(Continued from page 17)

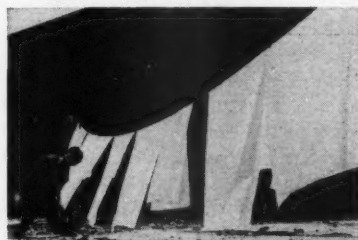
to the new wave, a taut and beautifully timed murder-trial thriller about Parisian Latin Quarter youth, with Brigitte Bardot giving a surprising performance as the untamable, passionate girl who shoots her lover. Clouzot brings off a *tour de force*, more gripping than his *Wages of Fear*.

The sense of timing that Clouzot shows in *La Verite* is absent, unfortunately, in *Eve Wants to Sleep* (dir., Tadeusz Chmielewski; phot., Stepan Matyjaszkiewicz; b & w), one of three Polish imports. As it is, this is a pleasant, mildly satirical comedy of confusion about an imaginary town that is more or less run by crooks.

The other two Polish movies are directed by Andrzej Wajda, who can be powerful indeed when not tempted into stagy or overdone effects. In *Kanal* (phot., Jerzy Lipman; b & w), about resistance fighters in the War-



La Verite: a killer on trial.



Ashes and Diamonds: a killer killed.

saw uprising who try unsuccessfully to escape through the sewers, Wajda's faults are too often in evidence. Even so, there are some fine scenes—among others, the fantastically long traveling shot that roams past the fighters as they file, sniped at, through the ruins; and a close-up of a wounded man's hand, slippery with filth, as he loses his grip and slides down a sloping sewer. In *Ashes and Diamonds* (phot., Jerzy Wojcik; b & w), the tragedy of an anti-Communist assassin, Wajda is more consistently successful, bringing off even such bravura scenes as fireworks bursting in the night sky behind the assassin and his victim. There is humor and tenderness, too, as in a Hitchcockian scene where the hero is with a girl and tries to pick up a dropped bullet without her seeing it. The stark photography, much of it made with a wide-angle lens, enhances this strange blend of savagery, sadness and comedy.—THE END

TOO HOT TO HANDLE

Do you agree with the statement made by H. S. Newcombe in his book "35mm Photo Techniques" that the 50mm f/2 Leitz Summicron is exceptional and is unrivaled for color?—Joy Furness, Newark, N.J.

We certainly agree that the f/2 Summicron is exceptional as far as definition is concerned, but we would hesitate to say that its performance with color is unrivaled. There are a number of lenses which we feel produce equally good color rendition.

I wonder if you could tell me which is the best buy of these three cameras—the 35mm Super Dollina with f/2.8 Tessar at \$27.50; the 35mm Minolta A-5 with f/2.8 Rokkor at \$37.50; or the 2 1/4 x 2 1/4 Edixa Reflex with f/2.8 Steinheil Cassar lens at \$49?—Gustavo Bopp Blu, Santiago, Chile.

We would choose the Minolta A-5 with f/2.8 Rokkor lens. We don't think the Super Dollina is in the same feature or structural quality class as the Minolta. Nor can we recommend the 2 1/4 x 2 1/4 Edixa Reflex with the Steinheil Cassar lens, which is of three-element design. This lens isn't equal to the job of covering the full 2 1/4 x 2 1/4 negative.

Does Bolex plan to come out with a fully automatic 8mm movie camera?—Michael Fante, Bronx, N.Y.

As far as we can tell, not in the immediate future. But undoubtedly they are thinking about it.

How would you compare the Pathe Webbo-M reflex 16mm movie camera with the Bolex H-16 Rex?—H. Reluga, New Britain, Conn.

First, the Bolex is somewhat more automatic in operation. The automatic film loading feature is practically foolproof. During tests, and also subsequent shooting with the Pathe, we found that film often jammed. The variable shutter on the Bolex Rex is fully automatic (geared to the motor), while that on the Pathe is manually operated. The Bolex through-the-lens viewing and focusing finder is, in our opinion, easier to use than the one on the Pathe. The ground-glass image is brighter. The through-lens image of the Pathe, however, is usable

under good daylight and strong tungsten lighting conditions. The Bolex requires special RX lenses for accurate focus. The thread on the Pathe is too shallow for some lenses available in the U.S. The Bolex offers speeds of 8 to 64 fps; the Pathe has 8 to 84 fps. Both have single-frame devices, supplementary finders, frame counters, and backwinds.

There's a company advertising the Iko-flex Ic with Zeiss f/3.5 lens for \$39. Is this the same lens found on more expensive cameras?—J. C. Youngblood, East Point, Ga.

The name Zeiss, in this case, doesn't tell us a thing about the lens. The two lenses most often found on the Iko-flex Ic were the Novar and the Tessar. If the lens referred to in the advertisement is a Tessar, we would consider the camera a good buy. If it's the Novar, which is of three-element design, you'll probably find that results at fairly large apertures aren't entirely satisfactory.

I find the Nikkor lenses for the Nikon F a bit high for my budget. Which of these 135mm f/2.8 lenses would you recommend—the Spiratone (Accura), the Soligor, or the Sonnar?—I. H. Segal, Madison, Wis.

The Spiratone (Accura). Incidentally, don't mix up the Soligor rangefinder lenses with the far superior Miranda-Soligor lenses.

I received a copy of your table for setting shutter speeds to arrest different movements. However, I find it rather complicated. Isn't there a simpler list?—E. Jakszta, Lowell, Mass.

Although we sent the table, we really don't think much of such things. It would be far more complicated still if it allowed for all the possible varieties of speed changes and multiple directions of any moving object. Even then, it might call for a shutter speed faster than your camera offers. So ignore the table and try this rule of thumb: Use your fastest possible speed consistent with good exposure and required depth of field.

I realize that you rate the Schneider Componon enlarging lens as tops, but how does the Schneider Componon rate

with the 50mm f/3.5 Steinheil Cassar? Also, can a regular wide-angle camera lens be used to make larger prints?—L. H. Scott, Independence, Mo.

We rate the Componon as superior to the Steinheil Cassar. We wouldn't recommend using a wide-angle camera lens for enlarging—you'd undoubtedly lose sharpness at the corners because of its inability to form a sharp image over a flat plane (such as the easel).

I'm trying to decide between the 135mm f/3.5 Steinheil Auto-Quinar and the 135mm f/2.8 Steinheil Quinar preset. The automatic feature of the f/3.5 would be of no particular advantage to me, while the f/2.8 costs less. Is there any difference in performance between the two lenses?—A. R. Krueger, Sioux Falls, So. Dak.

We do not feel that there is any difference in general performance and, since the automatic feature is of no importance to you, you would be better off with the faster lens at the lower price.

I have a Leica M3 with 50mm f/1.5 Summarit lens and have been offered a new Honor K 135mm f/3.5 lens for about \$80. Do you think it would be suitable for my Leica and is it a good buy?—A. Klingelhofer, Westfield, N. J. Not particularly. We feel that for \$80 you should be able to get a Leitz or Schneider lens in used but good condition which would give superior results.

YOU HAVE A QUESTION?

We're only too glad to help you with information or advice—but please put your question in writing. We're sorry, but we can't answer questions on the phone, not even from Honolulu.

I wish to replace the Summar lens on my Leica IIc with a lens of better quality. I am considering the Summarit, the Elmar f/3.5 and f/2.8, and the Summarit f/1.5. Which would you recommend?—J. M. Mitchell, Shreveport, La. Of the lenses you mention we would suggest either the Elmar f/3.5 or f/2.8, which are of approximately equal quality. The Summarit would be next, with the Summarit bringing up the rear.

I wonder if you could give me your opinion on the merits of the Nikkor and Leitz Super Angulon 21mm f/4 lenses for 35mm cameras? I have heard that the Nikkor's resolution is rather poor. Do you consider the Super Angulon better?—M. B. Miller, Los Angeles, Calif.

Our tests at various times on both the Nikkor and Leitz Super Angulon 21mm lenses have shown no indication that the resolution of the Nikkor was not up to that of the Super Angulon. However, since lenses vary from one specimen to another, a specific Leitz Super Angulon might be better than a specific Nikkor, or vice versa.—THE END

OUTSIDE FILTERS

REFLECTIONS ON AND FROM FILTERS ARE ANALYZED, SCRUTINIZED, CRITICIZED AND EXPLAINED BY RICHARD D. ZAKIA, ASS'T PROFESSOR, AND HOLLIS TODD, PROFESSOR, OF THE ROCHESTER INSTITUTE OF TECHNOLOGY. THE AWFUL TRUTH, PART TWO.

LIKE MOST of man's inventions, filters are not as efficient as they seem to be. Ideally a filter should simply absorb certain specific parts of the spectrum and transmit others. We saw last month that this is not the case. Filters absorb what they should not and transmit more than they should. In addition, another factor rounds out a filter's inefficiency: reflection. All light striking a filter is either reflected, absorbed or transmitted. In simple but precise technical terms, "the total amount of light striking a filter is equal to the sum of the amount of light reflected, absorbed and transmitted." This is sometimes known as the RAT formula from the three letters beginning each of the three actions.

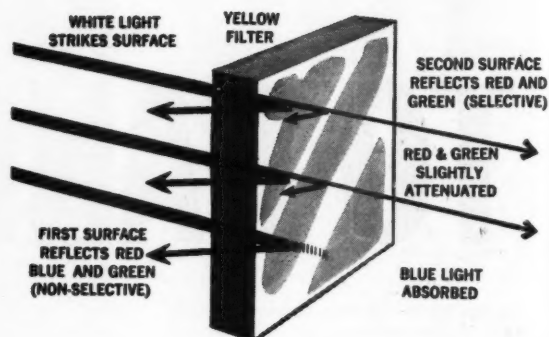
In photographic theory a large storm can often be blown up over a fact which is quite insignificant in actual photographic practice. This is not true about reflectance. It does affect photography through filters and very much so.

Light passing through a filter is altered in two distinct ways (see Fig. 1).

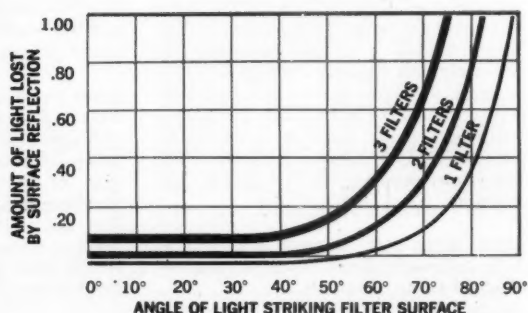
1. By absorption. This is a selective reduction of the light and is the actual function for which the filter was designed. The dye in the filter governs the selectivity. For instance, in the yellow filter (1) blue light is absorbed.

2. By reflection. White light is reduced by reflection from the first surface of the filter. The colors not absorbed by the filter dye are further reduced by reflection from the second surface of the filter (1).

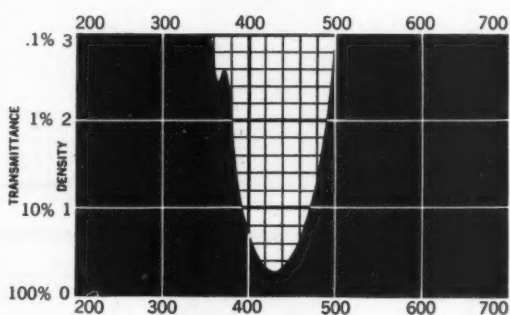
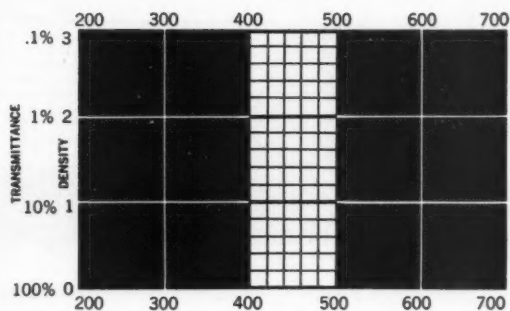
Each filter reflects at least 4% of the light falling on it and often much more, regardless of the wavelength of the light, the type of construction or the dye used. Since every surface causes reflections, it's only reasonable that the fewer filters you use at one time the less light you will lose through reflection. Loss of light transmitted isn't the only bad consequence. Reflection con-



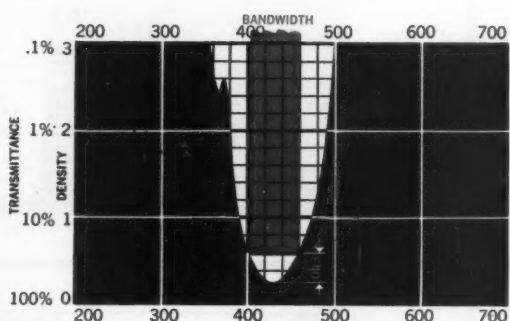
1. FILTERS REFLECT INSIDE & OUTSIDE: All colors are reflected from the first surface. But once light enters the filter, part of it, depending on the filter dye, is also reflected from the facing inner surface. Above you see how this affects a yellow filter. You can prove the existence of the double reflections by removing your eyeglasses and observing an overhead light reflected from them. You'll see two images.



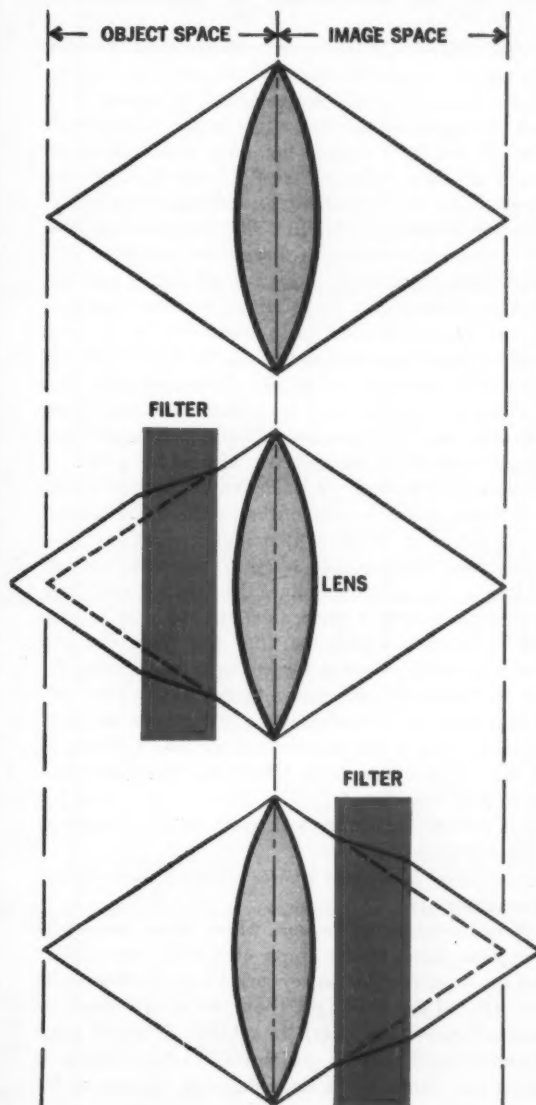
2. USE AS FEW FILTERS AS YOU CAN: Reflection can cause an amazing amount of light loss when you're using filters. How much? It depends largely on the angle at which the light strikes the filter. Here you can see the correlation. Up to an angle of 40° the light loss, even with 3 filters, is below 20%. But look what happens at 70°. Although only 20% is lost with one filter, 75% of the light never gets to the film if you're using 3 filters. Obviously filters are less efficient when you use wide-angle lenses with large covering angles than when you use normal or tele lenses. Moral: If one filter can do the job of two, use it.



3. ANOTHER FILTER WEAKNESS—ABSORPTION: Two other factors sap a filter's performance—absorption where there should be none and non-absorption where there should be some. Ideal 47B (blue) filter, top, which absorbs no blue light, differs from real filter, bottom, which absorbs 50%.



4. CLASSIFYING FILTERS: Filters are often described by bandwidth. Here's how it's determined. (a) Find the point of minimum density. (b) Mark a line .3 units above it. (c) Determine the bandwidth from the points of intersection on the curve. The 46B filter is about 60 millimicrons wide.



5. HOW FILTERS AFFECT FOCUS: Photographers are often warned to focus with the filter in place when shooting close-ups. Here's why. At top you see the sketch of a lens focused on a close-up object at 1:1 ratio, with object and image space equal. If a fairly thick filter is placed between the lens and the subject, refraction within the filter makes the object appear farther away (middle). The increase in apparent distance is approx. $\frac{1}{3}$ the thickness of the filter. If the filter is placed behind the lens (bottom), the image seems displaced toward the film.

HERE IS AN ABBREVIATED CLASSIFICATION OF BASIC FILTERS ACCORDING TO BANDWIDTH. ▽

tributes to flare light in the image formed on the film, reducing the tonal differences (contrast), particularly in the shadow areas of a scene. Detail disappears. The more filters you use the worse this becomes. The angle at which the light strikes the filter also affects the amount of light reflected. Fig. 2, which shows the correlation of number of filters used against angle of light, should properly horrify all photographers who load wide-angle lenses with more than one filter.

Reflection from filter surfaces isn't just a problem in taking pictures but in printing them too—particularly in color, where filter packs containing two or more filters are sometimes used in front of the lens. Reflection is one of the reasons you should always substitute two CC filters for three if you can achieve the same effect. In an enlarger, flare light caused by reflection produces a loss of contrast in the highlight area of the print.

While some amount of reflection inefficiency exists in all filters, it can be minimized by the manufacturer and by the user. When a filter maker coats his glass or cemented between-glass filters in the same manner as a lens is coated, he can reduce the light reflected from the first surface by a good amount. The user in turn must be careful to keep the filter free from dirt and scratches, which can alter the angle of light hitting the filter surface and so increase reflectance. The filter and the lens must be absolutely parallel (usually no problem when screw or bayonet mounts are used). If they're not, the angle of the light hitting the filter increases and so does reflection.

Now let's take a further look at the other two sources of filter inefficiency:

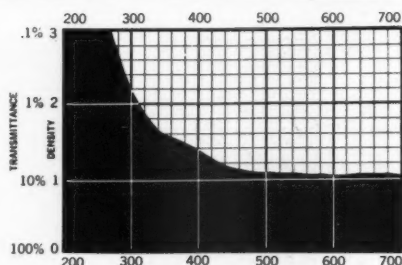
1. Absorption in regions where (ideally) there should be no absorption.
2. Non-absorption in regions where there should be absorption. Look at the graph of a 47B (blue) filter used for separation negative work (Fig. 3). It absorbs over 50% of the blue light (bottom) where ideally it shouldn't absorb any (top). In addition, it allows some ultraviolet radiation to get through when ideally it should not. Other filters have different degrees of inefficiency due to unwanted absorptions. Some color compensating filters absorb about 10% of the light in regions in which they should absorb none. There's a 94 (blue) filter with 92% unwanted absorption. But probably the most notorious is the 54 (green) which absorbs about 99% of the light it should pass. Such inefficiencies are unfortunate but the filters are the best any manufacturer can provide. The problem is in the organic dyes themselves. We can only approximate the many different absorption characteristics we want.

Filter thickness is another characteristic which can play hob with efficiency—but in a very different way. Thickness is no problem with gelatin filters. They are only a fraction of a millimeter thick. But the thickness of cemented gelatin filters and glass filters runs about 2 to 5 millimeters, which can cause a focusing problem. When a near object is

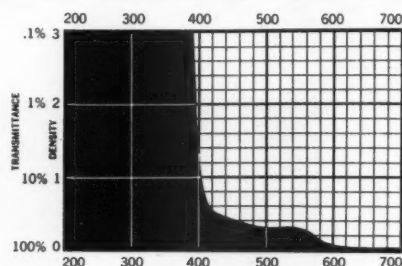
(Continued on page 94)

WIDE BAND FILTERS

(About 300 or more millimicrons)

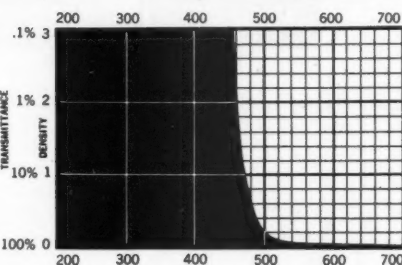


(About 300 or more millimicrons)



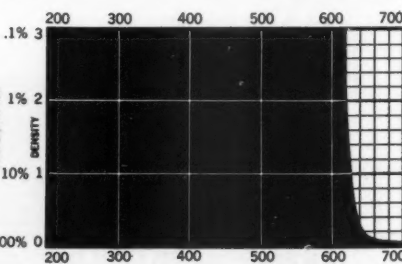
MEDIUM BAND FILTERS

(About 200 millimicrons)



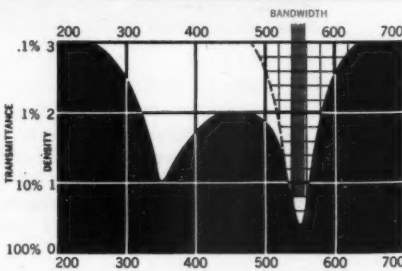
NARROW BAND FILTERS

(About 100 millimicrons or less)



VERY NARROW BAND FILTERS

(About 20 millimicrons)



	Appearance	Color of light absorbed	Intended use	Type film
Non-selective absorption				
a) polarizing filters	grayish	red, green and blue	eliminate unwanted reflections; darken sky	black & white, color
b) neutral density filters	grayish	red, green and blue	reduce light intensity (each 0.30 ND is equivalent to 1 full camera stop)	black & white, color
Selective absorption				
a) light-balancing filters				
Wr81,A,B,C,D,EF	yellowish	blue	decrease color temp	color
Wr82,82A,82B,82C	bluish	red, green	increase color temp	color
Wr85,85B,85C	yellowish	blue	decrease color temp	color
b) Ultraviolet absorbing				
Wr2B, Skylight 1A	clear	ultraviolet	reduces haze	black & white, color
Color Comp and Printing				
cyan	blue-green	red	regulate the amounts of red, green and blue light necessary to properly expose a color material in a camera or printer	color
magenta	blue-red	green		
yellow	yellowish	blue		
red	reddish	green, blue		
green	greenish	red, blue		
blue	bluish	red, green		
Contrast type filters				
WrK2,K3,G	yellow to orange	blue to blue-green	increase contrast	black & white
Filters for general color density measurements				
Wr92	dark red	green, blue	density measurements for process control study of color materials	—
Wr93	dark green	red, blue		
Wr94	dark blue	red, green		
Filters for infrared				
Wr70,87,88A,89B	dark red	blue, green and some red	photographing object by infrared radiation	black & white
Kodak Series 10 Safelight Filter	dark yellow	blue, most of green & red	safelight for Ektacolor print material	—
Interference filters	various	various	specialized work	

AUTOMATIC CLOSE-UPS

WHY SHOULD close-up photography be regarded by many amateurs and even by some professionals as difficult and complicated? Is this opinion justified? If there are difficulties, why can't most be overcome with modern techniques and equipment? It's certainly worth trying in order to penetrate the small-dimensional world. Viewed close-up, even the most common subjects may seem unreal and fantastic. And with single-lens reflexes

and reflex housings for rangefinder cameras becoming more and more popular, it's nonsensical not to use the opportunities they offer in close-up photography.

Besides a camera with a through-the-lens viewing system, an electronic flash is the most useful piece of equipment for close-up work. Its very brief but intense light allows you to stop down your lens considerably for maximum depth of field and frees you completely from worrying about subject or camera movement. Unfortunately, the calculations necessary in using electronic flash for close-up with bellows or extension tubes are apt to send any photographer in search of a good book on higher mathematics. But electronic flash can be used in such a way that the need of determining effective working apertures from bellows factors or other computations is completely eliminated, thus making possible a very simple and foolproof system of close-up photography.

In shooting close-ups by electronic flash, the main problem encountered is that of exposure determination. Whenever the lens is extended away from the camera body by the use of bellows extensions or extension tubes, the f-number set on the lens no longer indicates the effective working aperture. You can't use the indi-

**YOU CAN USE BELLWS
OR EXTENSION TUBES
PLUS FLASH OUTDOORS
WITH NO COMPLICATED
EXPOSURE CALCULA-
TIONS. EXPERT NATURE
PHOTOGRAPHER HER-
MANN EISENBEISS SHOWS
YOU JUST HOW IT'S DONE.**

cated opening to calculate the proper lamp-to-subject distance. You won't find the right distance for electronic flash by dividing the guide number by the f-number indicated. You must divide the guide number by the *effective working aperture*. The Kodak Master Photoguide contains a dial-computer which shows effective working apertures directly, providing the lens-to-film distance has been measured.

But it will be more convenient for

you to use the charts reproduced on page 59. From these you can read the proper lamp-to-subject distance directly without calculating effective working apertures. Using chart 1 (page 59) you first determine the scale of reproduction from the extension and focal length of the camera lens. Then you can read the proper lamp-to-subject distance directly from chart 2. In this chart, lamp-to-subject distances are given both for f/11 and f/16. (Please remember that these are actual lens settings. We've eliminated any reference to effective working apertures. Use the f/numbers as they appear on your lens.) In shooting close-ups with a 35mm camera, best results are usually obtained by stopping the lens down to f/11 or f/16. It is not advisable to stop down further because this will result in very small effective working apertures, causing loss of definition due to diffraction of light. In using flashlamps at short distances, don't measure the lamp-to-subject distance from the front of the lamp, or underexposure will result. Measure from the rear vertex of the reflector.

Occasionally another problem pops up. The distribution of light by some reflectors prevents guide numbers from being accurate at very short distances. This is especially true with (Continued on page 88)





△ **AUTOMATIC CLOSE-UP:** The shiny reflector and humming vibrator of my Braun Hobby electronic flash unit aroused the curiosity of this ordinarily timid frog. The 135mm f/4.5 Leitz Hektor lens on a bellows extension allowed me to approach close enough with the 2¼ x 2¼ Praktisix. The Agfacolor CT 18 (E.I. 50) required an f/16 exposure which had been automatically selected (see text).

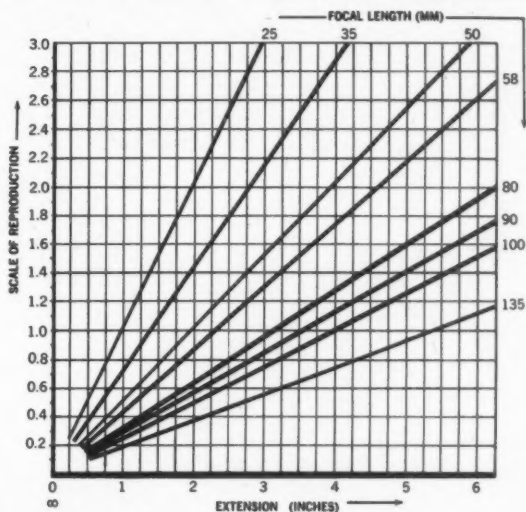
▷ **PRESET CLOSE-UP:** With the Praktisix set on a tripod, I focused on the fuchsia flower, then waited for the bee. Same camera and lens and flash unit as above but film was Ektachrome E-3 and f/16 exposure was easily calculated from tables on the opposite page. A second flash unit illuminated the background.

◁ **HAND-HELD CLOSE-UP:** On field trips, my hand-held pistol grip aids maneuverability (see text). Using automatic exposure calculation, I photographed butterfly with same equipment, exposure as frog above.



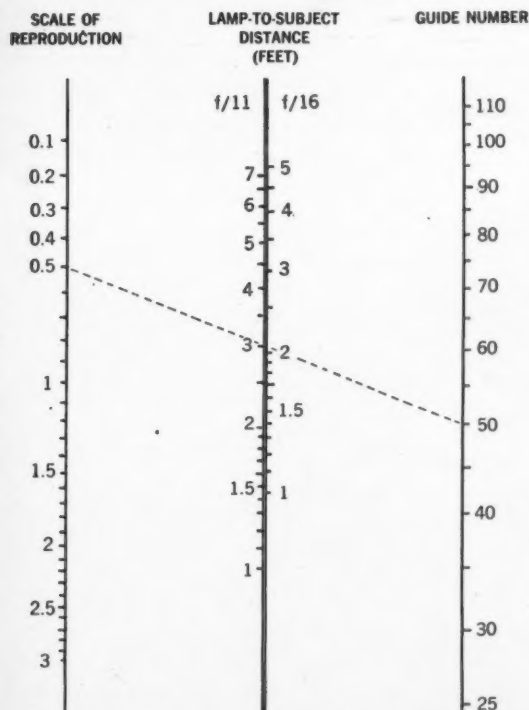
If you shoot close-ups with bellows or extension tubes and flash (electronic or otherwise), you can use these tables and throw away all the books on close-up calculations, depth of field and effective working aperture. You have two methods of working, depending on the magnification of your image. If you're producing an image on the film greater than life-size you can use the nomographs and chart here to figure your exposure to the letter. However, there's an even simpler method if your close-ups are less than life-size and you're using a longer-than-100mm lens (see text). If you've never used nomographs such as those below, here's how you do it. You lay any kind of straight edge (ruler, pencil, etc.) across the nomograph so that it touches two known values—e.g. scale of reproduction and flash guide number in chart 2. Then the unknown value—here, lamp-to-subject distance—will be given at the point where the straight edge crosses the center line. Nomographs here are copyrighted by the author.

FIRST FIND YOUR SCALE OF REPRODUCTION



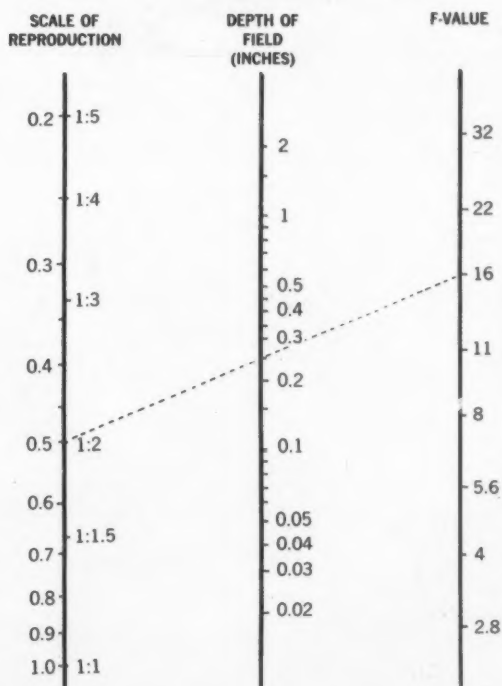
1. Find the diagonal line representing your lens focal length. Measure extension from film plane to lens diaphragm, and note where distance intersects focal length. Read reproduction scale at left. Above 1.0 is bigger than life.

THEN GET THE LAMP-TO-SUBJECT DISTANCE



2. Connect reproduction scale found in (1) with guide number of your flash. Read lamp-to-subject distance for f/11 or f/16 at center. Example: if reproduction scale is 0.5 and guide no. is 50, lamp-to-subject distance is 3 ft. at f/11, 2.1 ft. at f/16.

NOW FIND YOUR DEPTH OF FIELD



3. Align reproduction scale with working f/value to find depth of field. Here .5 (1:2) at f/16 gives you depth of field of .25 inches. This information, although not necessary for producing proper exposure, will indicate extent of sharpness.



You may hate these photographs. Or you may regard them as fine art. You may think they are poetic, or corny, exciting or annoying, but you will not be indifferent to them. Ever since Clarence John Laughlin began to photograph in the 1930's, his work has been controversial and has aroused the most violent of passions.

His pictures have hung in many museums throughout the country and have been published in countless magazines, including *Life*, *Harper's Bazaar*, and *Vogue*. We aren't choosing sides in presenting them here—we want you to be the judge, and to let us know how you decide. The words belows are Laughlin's own explanation of his aim and approach; the captions accompanying the photographs on the following four pages are his explanation of their meaning. Laughlin feels that technique is of secondary importance to the images themselves and the ideas which underlie them, and so technical data has not been published.

WHY?

BECAUSE

I did not start out as a photographer, but instead as a writer. Whether for good or for ill, this fact has inspired, and colored, many of my concepts.

Through photography, actually, I have endeavored also to tie together my active interests in painting, in poetry, in psychology and in architecture. Whatever value my photography has is due only to these other interests. The mystery of time, the magic of light, the enigma of reality—and their interrelationships—are my constant themes and preoccupations. The creative photographer should be able to put the stamp of his way of seeing on whatever material he touches, just as in the case of the good painter or poet. This means that the object (in the photograph) must be so treated, or so grasped—not merely in technical terms but in terms of the presensitizing of an individual imagination and its projection through the so-called “im-personal” lens—that the object does become personal by acquiring meanings beyond itself. It is only when the photograph presents the object in such a way that the meanings conveyed transcend the meaning of the object as a thing-in-itself that photography becomes art. My central position is one of extreme romanticism: the concept of reality as being mystery and magic; of the power of the “unknown” which human beings do not want to realize, and which none of their religious and intellectual systems can really take into account. This position is now completely out of fashion. As a corollary of this, there is an attempt, through much of my work, to animate all things, even so-called “inanimate” objects, with the spirit of man. This extremely animistic projection I have come by degrees to realize rises, ultimately, from my profound fear, and disquiet, over the accelerating mechanization of man which is now exhibiting activity and which is one of the dominant expressions of our society. The photograph *The Mask Grows To Us*, (opposite) is from what I believe to be my most original and difficult project (Text continued on page 86, photographs on the following page)



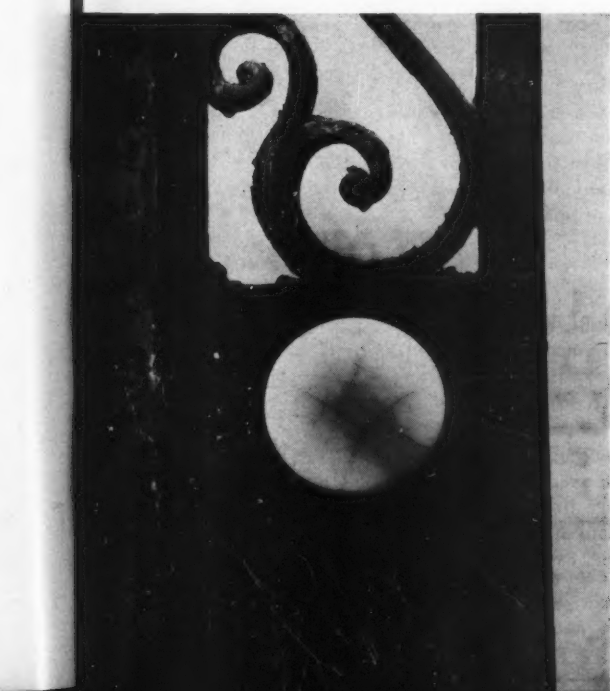
LAUGHLIN (cont.)

THE REPULSIVE BED, 1941. This picture becomes the image of those who endure marriage without love, because of convention and false morality. The neurotic cast of the face seen here implies a marriage, also, that has partly failed because of repression. And now, from the disintegrating marriage bed rises a monstrous head (it is in profile, on the right side of the bed, and its snout rests on the hip of the figure in black), the projection of the repugnance the bed arouses. This setting could be used for a play of Jean Paul Sartre—except that I happened to make the picture before Sartre was known in this country.

MARS IN THE HOUSE OF TIME, 1956. One of a series, "The Magic of Objects and the Mystery of Space," in which I have attempted to show how commonplace objects can be approached in such a way that the camera will release from them a kind of magic, i.e. levels of meaning which the objects would never have for us ordinarily without a certain kind of imaginative preconditioning. Naturalistically, this is only the cast-iron door of a raised tomb in a New Orleans cemetery with its knob surrounded by cobwebs. But imaginative pre-conditioning caused the photographer to see the cracks in the knob as being not unlike the drawings of the so-called "canals" of Mars. Mars now emerges from a black sky of iron, in the house of time, and the camera has been used to relate a poetic meaning to a naturalistic meaning.



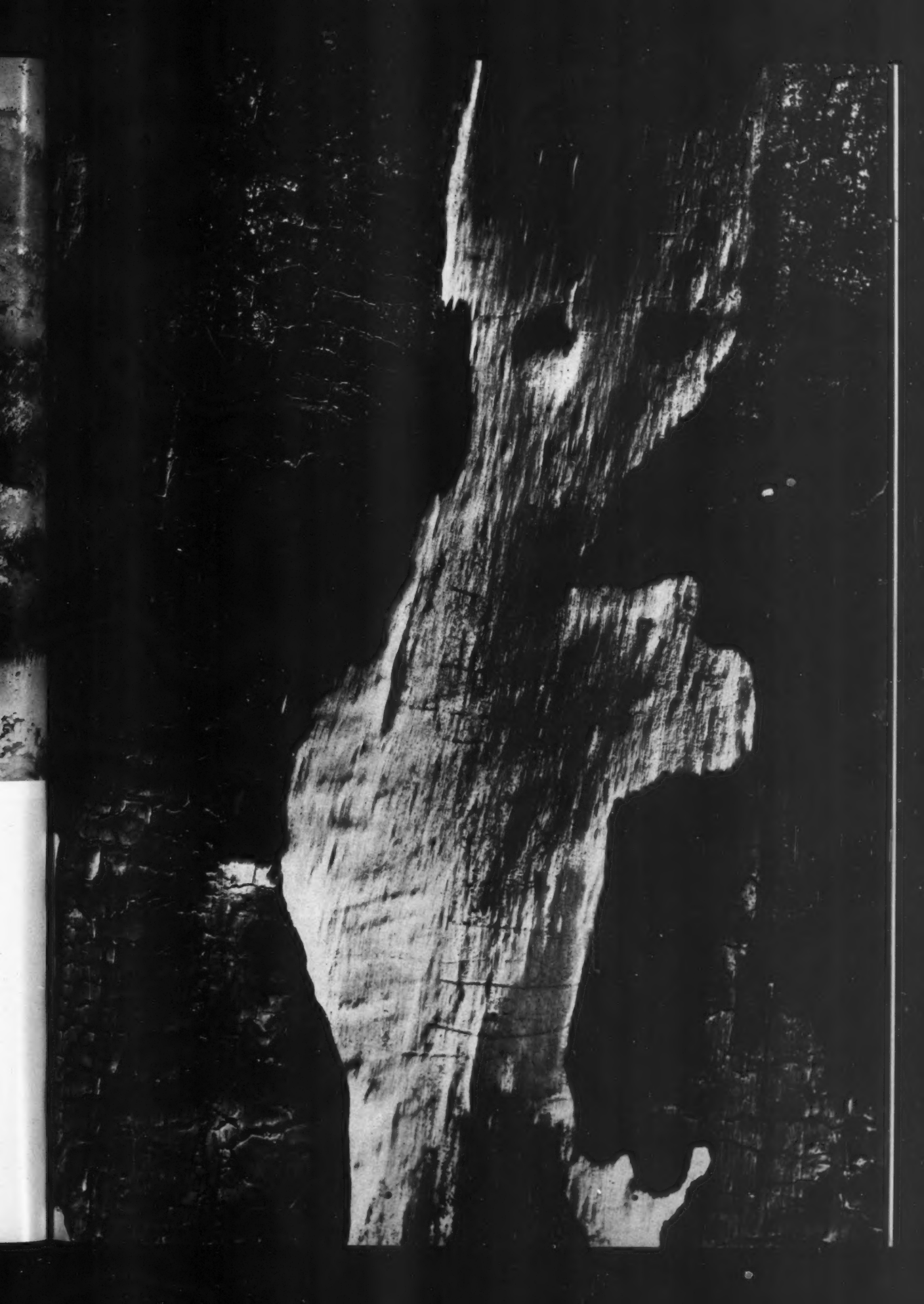
LOST PARADISE FOR DEAD BIRDS, 1951. This photograph is a late addition to a group of still lifes begun in 1936. The object is an ostrich feather fan, made in the 1890's, and belonging to Mrs. Leland Stanford, in which dead birds had been mounted. For those who do not recognize how completely a physical object may project and crystallize the inner character of a particular culture this should be worth studying, for here is the essence of Victorianism. The birds convey the feeling, here, of having been smothered to death in a sort of outpouring of luxury—and, indeed, Victorian culture had a kind of smothering effect in many different directions.





THE ROAD TO NEVER LAND, 1958. A 19th Century painting on glass with the paint flaking off now becomes a bridge to a realm which could exist only in defeated and wishful dreams—a realm where the water has mysterious depths, where the building congeals out of the chaos of time, and where the moon, nacreous, begins to have an anxious and concerned face. From "The Magic of Objects and the Mystery of Space."

LITTLE FRIGHTENED GHOST, 1952. From the series on tree forms, in which there is an attempt to show how, just like the good painter, the photographer can approach nature and while ostensibly dealing directly with it, can at the same time project something of his own inner world. Here, a huge cypress tree is seen quite close up. The tree had been severely burned, and what is visible here, physically, is a small part of the bark left untouched by the flames. But since the tree has been approached with something of the vision of the poet we see, now, a great deal more than merely an unburnt area. We see, instead, a strange timid little creature who might have stepped out of a canvas by Paul Klee—and who is frightened by the world it had intended to frighten, as it well might be.



WHY NOT FRAME YOUR SUBJECT?



OUR RULE about rules is: Break them. We're categorically against all visual, mechanical and technical tricks guaranteed to produce exciting pictures no matter what, where, and when you're shooting. But just because framing, that well-traveled road to picture-postcard landscapes, has been overworked as applied to places, there's no reason why it can't prove effective when applied to people.

The use of props in portraiture—from the rose coyly sniffed by the Victorian lady to the environmental props used by Arnold Newman to suggest his sitters' professions—is older than the camera itself. But conventionally props are used as a background, and are of secondary importance visually. Here, in this portrait of Elizabeth Taylor by Burt Glinn, the prop (a bent wood and wicker chair) is an essential element in the photograph's overall design.

Since Glinn had little actual control over his subject, who was photographed on a movie set, he had to work entirely candidly, relying on changing camera angle, lens and shooting distance to get the effect he was after. Since this subject required the most precise framing—had he moved an inch to either side, the chair frame would have covered either the subject's eye or her mouth—the parallax-free ground glass of his Nikon F reflex proved essential for composition. And since he used a 180mm lens he was able to stand back from the subject yet fill the frame completely with her head.

The selection of the exact camera angle is all-important when using frames in portraiture. When Glinn first spotted his subject he moved in and shot (*top left*); then moved forward and in and shot again. It was several frames and several moments later before he finally found the perfect combination of shooting distance and angle *opposite*, where the sweeping curls of the bent wood echo the lines of the masses of hair, and the curve of the side arm intersects the profile so harmoniously as to seem a part of it.

Glinn's choice of film—Plus-X Pan—was based on the relatively high level of artificial illumination used by most professional movie makers; his meter technique was simple. Since different scenes are usually lit equally, and evenly, he found occasional checks with the Norwood sufficient to ensure accurate exposure, and did not have to meter each specific subject whenever he shot a picture.

One caution when using frames for portraiture: be sure the one you choose fits the subject. Here, for instance, a cold, angular, metal sculpture would be entirely out of keeping, just as the voluptuous curves of the chair employed would make an inappropriate frame for the craggy features of, say, a Burt Lancaster.—P.C.

Nikon F, 180mm f/2.8 Sonnar lens, Plus-X Pan rated at E.I. 160, 1/125 at approximately f/4.5.



LONG EXPOSURES SHORT NIGHTS

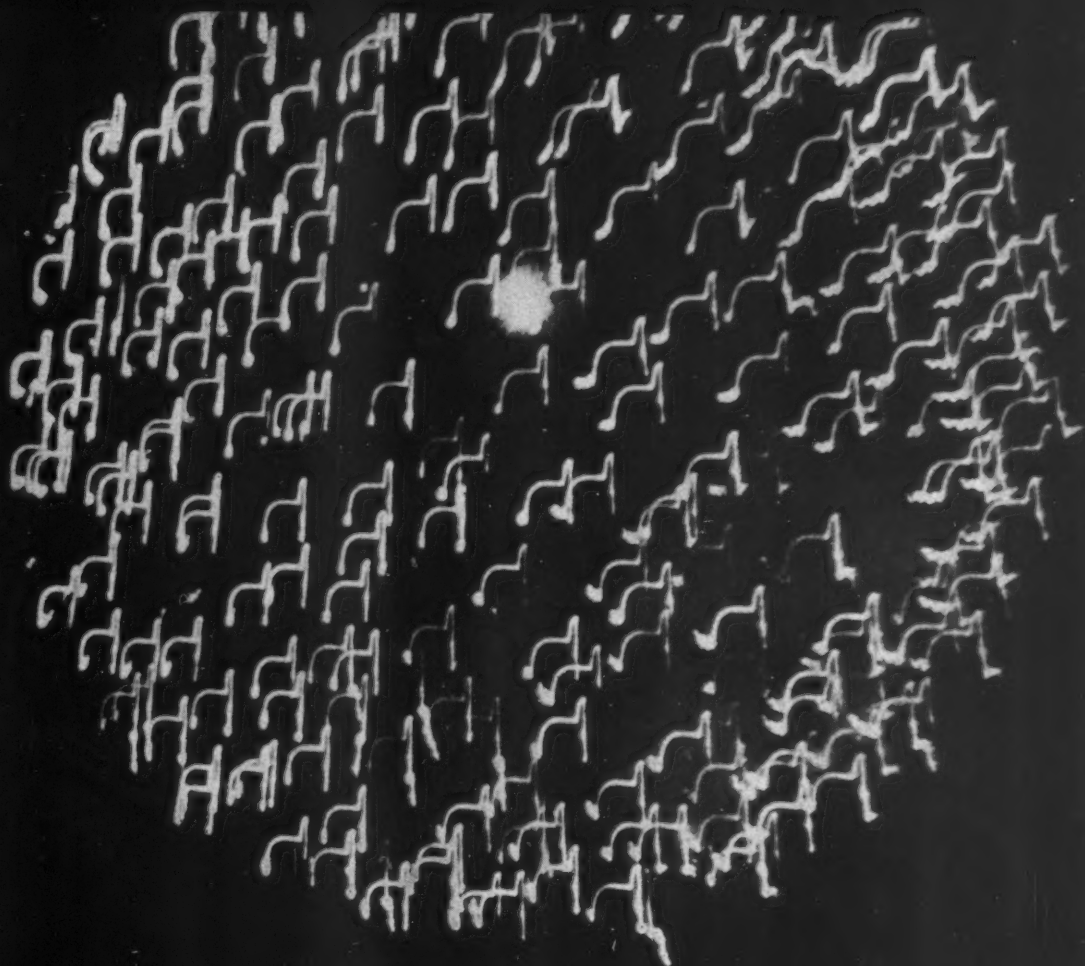
SUMMERTIME means sunshine, sparkling landscapes, boats on glinting water, contrasty street scenes, children at play, etc., etc. But if you want a change from the round of $f/16$ at $1/125$ sec., summer is also the best time to start shooting when the sun goes down.

There are two kinds of long-exposure pictures that you can take. For the first, the subject itself determines the length of the exposure quite precisely. The fireworks picture *at right*, for example, was exposed for 4 sec.: any shorter, and the burst would have been too small; any longer, and the burst would have become too confused. In situations where you want to capture a particular pattern of moving lights (or the moon or the stars), or for scenes that you wish to record more or less as your eyes see them, there will be one best exposure. But you can also use long exposures creatively, choosing a shorter or a longer time to change the appearance of the scene. The pictures on *pages 70 and 71* show how a single night scene can be given many different aspects—including the aspect of daylight!

Within these two kinds of night exposures there is a variety of effects that you can obtain. Do you want to take a picture of a street or a park without people—and the street or park is never empty during the day? Then try a very long exposure at night (if people do pass by, they won't show on the film). Do you want a picture that shows a transparent sky as well as street lamps and lighted windows? Shoot at dusk—in fact, you can make part of your exposure while the sky is still light, then wait and make the rest of the exposure after dark. And of course, for special effects, as in the picture *at right*,

EXPOSURE TIME IS DICTATED by the subject in pictures of rocket bursts and similar moving light sources. Here, Warren Seigmond also jiggled his camera to turn the light points into hooks. Nikon SP, 50mm $f/3.5$ Micro-Nikkor, 4 sec., $f/5.6$, Tri-X Pan.





LONG EXPOSURES (cont.)

you can move or vibrate your camera in many different ways.

For exposure times up to about 2 sec., it's possible to do without a tripod, provided that you can lean your camera against a wall, tree, etc. But it's wisest always to use a tripod for exposures of 1/15 sec. or longer. A cable release is advisable, though for exposures at speeds up to the longest on your shutter (in most cases, 1 sec.), you can avoid vibration by using the self timer. If your camera has no T setting, you'll save yourself a lot of finger-ache with really long exposures if you use a locking cable release.

If you use color film, daylight type will often give the most pleasing results. With tungsten, the light sources, especially illuminated signs and automobile headlights, will have an orange cast.

With black-and-white, there's no need to choose a fast film unless you have to make a comparatively short exposure and you need maximum depth of field. In most cases, you'll do better to choose a slow, fine-grain film and make a correspondingly longer exposure.

Seconds, minutes or what?

Now for determining exposure. With straight scenes containing static lights, the surest way is to make several progressively longer exposures, starting at 1/15 sec. at $f/2$ or the equivalent. If you want to record a trail of moving lights, as in the picture on page 69, you may start with a somewhat longer time. For street scenes showing many headlight trails, or for daylight effects, you'll obviously start with a time that's even longer. There's no need to keep your lens wide open. Close it well down not only if you want maximum depth of field but also if you want to record only the actual light sources. When these two considerations don't apply, use your lens' optimum aperture—usually two to three openings smaller than the maximum (say, $f/5.6$ with an $f/2$ lens).

If you have neither the time nor the film to make several trial exposures, take a reflected-light meter reading from an object close to one of the light sources in the scene (not from the source itself).

Don't rely on development to achieve a lighter effect in your pictures, or the highlights will be completely washed out. Instead, give more exposure and develop normally—as with the day-night pictures *at right*.

Finally, don't hesitate to experiment. The results of long-exposure night photography are never exactly predictable, especially in color, but the unpredictable may be just what you want.—W.H.J.



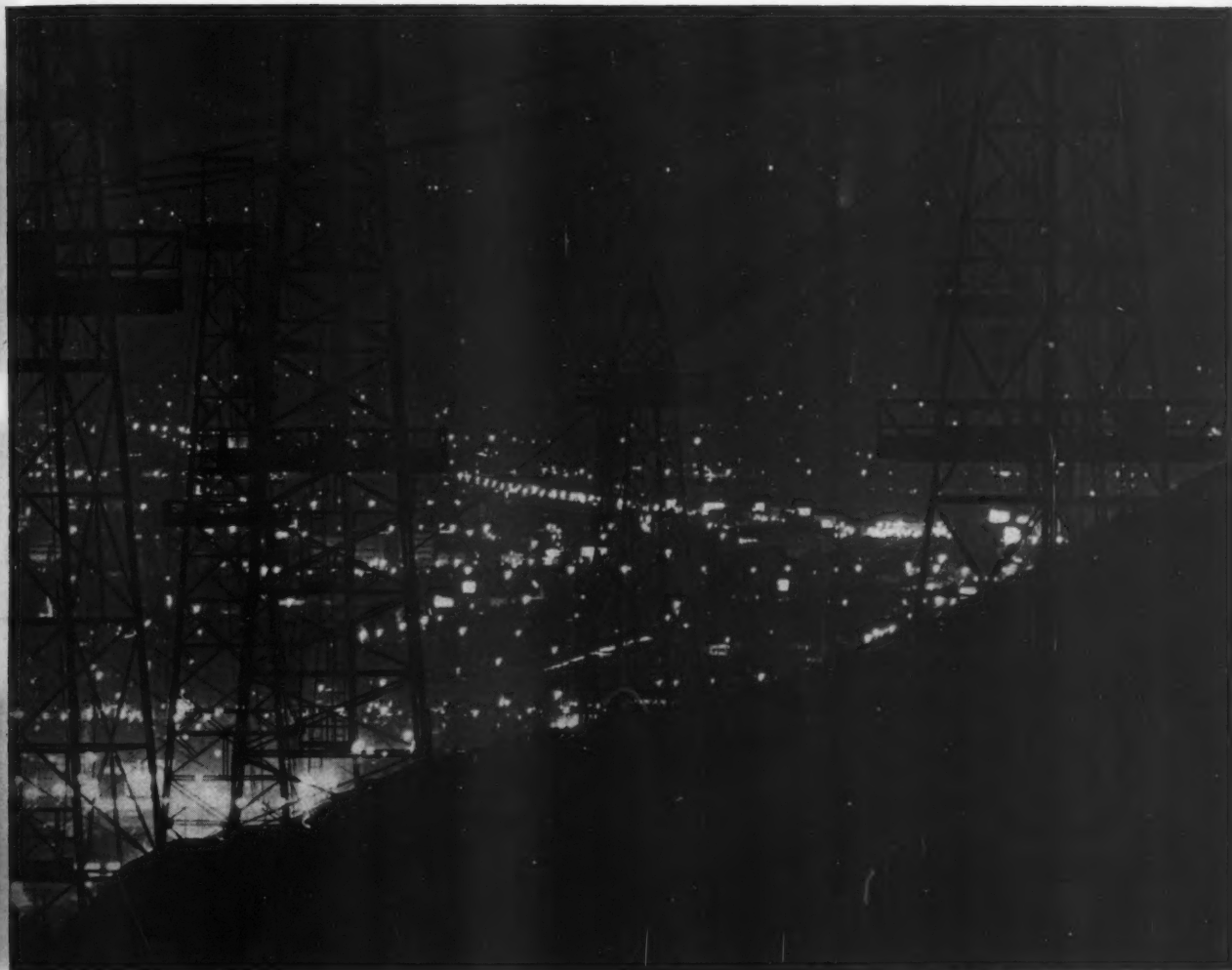
DAYLIGHT EFFECT: 30 MINUTES



DAYLIGHT EFFECT: 10 MINUTES

NIGHT EFFECT: 1 MINUTE





DUSK EFFECT: 3 MINUTES


NIGHT EFFECT: 1 SECOND



CHOOSE ANY EXPOSURE TIME

for a whole range of effects with static scenes. Jerry White shot the same scene many times, using a constant aperture of $f/5.6$ and varying the time from $1/15$ sec. up to 30 min. The first good night effect was obtained at 1 sec. From then on, the sky became progressively lighter, until at 30 min. there was an effect almost of dazzling sunlight. Probably the most striking of the series is the 3-min. exposure, above. Asahi Pentax, 300mm Noflexar, Follow-Focus, and Plus-X Pan.





camera OVERBOARD

GET YOUR CAMERA INTO THE WATER FOR A
NEW ANGLE ON OFFSHORE ACTION PICTURES

FORMULA FOR BETTER marine photographs—get wet. Getting in the water—close to the action—is almost a sure way to overcome the usual fault of most boating, water skiing, and swimming photographs. Practically all the shots you see look as if they were made with a telephoto lens from either dry land or the deck of a ship quite far from the actual scene. They lack the quality that makes the viewer feel he's right on top of things—something the photo *at left* definitely does. It was shot from wave height with a wide-angle lens.

Get an inexpensive plastic or rubber bag designed for shallow water skin diving photography to protect your camera. Properly sealed it will keep your camera dry. Before going into the water take a substitute reflected-light reading from the back of your hand or make an incident-light reading, and set the exposure. While controls can be manipulated to some extent in a plastic bag, it's best to preset focus distance, too. If the day is reasonably sunny and you use a medium-speed film you'll probably be able to use a small enough aperture to assure a large depth of field.

You won't be able to use the viewfinder on your camera, but a little practice will give you a good idea of the field of your normal or wide-angle lens.

Unless you can find a convenient reef to stand on, stay in shallow water, kneeling down to get the maximum low-angle effect.

Incidentally, the picture *below*, taken by Flip Schulke, shows Coral Gables photographer Frank Zagarino who took the photo *at left*. He's using an underwater housing made by Jordon Klein of Miami Beach, Fla.—M.A.M.





THE NEW Kodachrome is faster, sharper and more capable of producing true-to-life colors than its predecessor, Kodachrome. Our picture taking tests (May 1961 MODERN), although necessarily subjective, prove this conclusively. But we also wanted to show you the results of objective scientific testing. For those picture takers not hep to scientific jargon we've simplified long, detailed explanations.

The most obvious advantage of Kodachrome II is its film speed. Kodak rates KII daylight film at 25 and Type A at 40 (daylight Kodachrome is 10 and Type A 16. MODERN's feelings on these ratings were discussed in the May 1961 issue). D log E curves (density vs. log exposure) show exactly why there's much difficulty in assigning an exact film speed to Kodachrome II and even comparing it to Kodachrome. It is impossible to match a picture made with Kodachrome to one made with Kodachrome II, regardless of how you alter the exposures. You can only match specific tones with one film against the other—but not the entire range of tones. The reason is that the contrast characteristics of the two films differ entirely. Kodachrome II can handle a greater range of tones with a given subject than can Kodachrome. Kodachrome II has less inherent contrast. It therefore can be considered to have more "exposure latitude"—unlike Kodachrome, it can be used often at higher than its normal speed index and still produce adequate results.

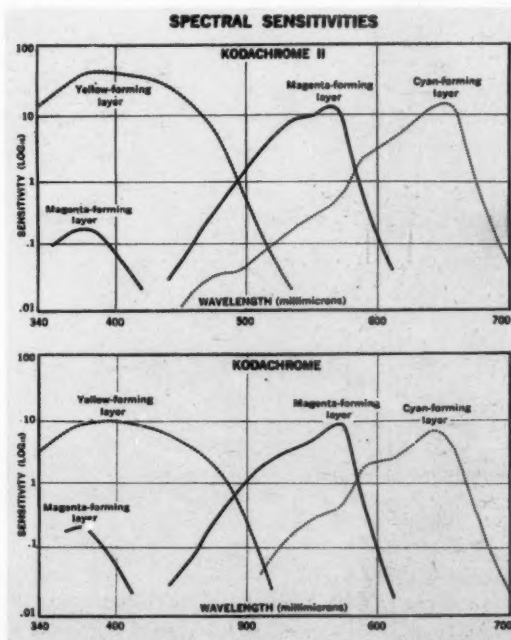
We are informed by Kodak that Kodachrome II comprises two more photosensitive layers than Kodachrome. These additional layers are said to account

in part for the improved tonal and color characteristics of the new film. And they do this without an increase in film thickness or a loss of sharpness. Through the use of new thin-emulsion manufacturing techniques, the thickness of each layer is reduced by a factor of ten, so that the total depth of photogelatin is substantially reduced.

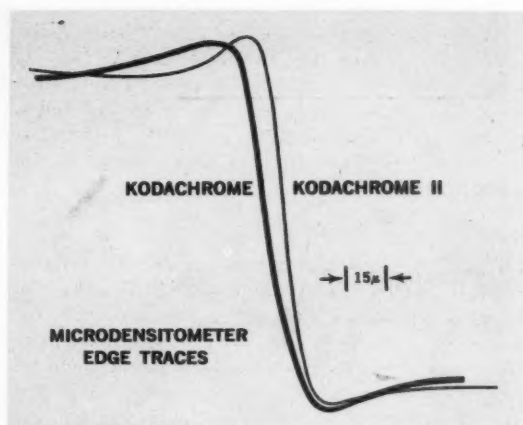
Sharpness and grain

Density readings made with a microdensitometer of a knife edge recorded on both Kodachrome and Kodachrome II are shown in Figure 2. The trace of Kodachrome II is steeper (it is closer to a vertical line) than the trace from the Kodachrome film. This indicates that there is a quicker transition between a dark and light tone with less spreading of the darker into the lighter tone than with Kodachrome. The result is the appearance of increased sharpness (acutance) with Kodachrome II. However, since Kodachrome is a very sharp film itself, and since the eye is capable of resolving only a limited amount of detail, the apparent difference between Kodachrome and Kodachrome II in 16mm and 35mm size is nothing astonishing. But in the 8mm size it's a pleasant surprise. In some cases it's thought that in 8mm size the sharpness of Kodachrome II comes very close to the sharpness of an image shot on 16mm Kodachrome.

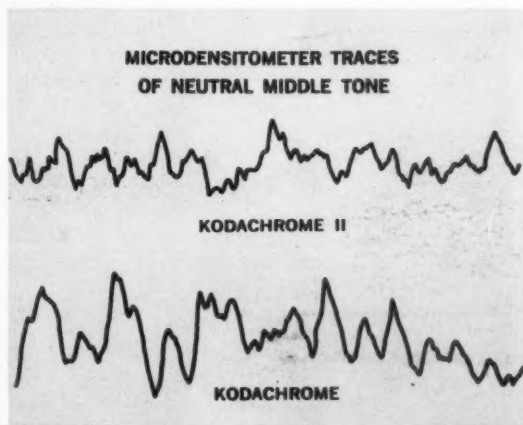
The impression of sharpness is reinforced by the smoothness of an image made with Kodachrome II.



1. WHY KODACHROME II GIVES TRUER COLORS. It's more sensitive than Kodachrome to the colors it's supposed to register (compare curve peaks), no more sensitive to colors it shouldn't register (compare lower portions of curves).



2. WHY IT'S SHARPER. Curve found for KII from microdensitometer trace of adjacent black-and-white image areas is steeper than that for K. KII is therefore capable of producing a sharper image.



3. WHY IT'S ALSO SMOOTHER LOOKING. Microdensitometer traces of neutral gray on K and KII produced shorter hills and valleys for KII, indicating that this film has smaller, closer grain clumps.

Figure 3 shows that Kodachrome II has greater smoothness or improved granularity. By tracing images of a neutral gray recorded by both films with a microdensitometer (using an extremely small aperture) the comparison of smoothness or granularity between the two films could easily be made.

It's been thought by some people that since the image smoothness of Kodachrome film was so fine, it had no apparent grain structure (this belief was strengthened by the knowledge that the silver in Kodachrome is bleached out in the processing), but nevertheless there is a discontinuity in tone under high magnification.

There are some important differences in color balance and contrast between the films. Kodachrome II can reproduce a gray scale far more consistently throughout a greater range of lighting than does Kodachrome.

Kodachrome II is not apt to produce bluish or cyan tinted shadows as is normally the case with Kodachrome. If we compare the inherent contrast characteristics of both films, Kodachrome II theoretically has it all over Kodachrome. The $D \log E$ curves (not shown) indicate that Kodachrome II has a greater tolerance for underexposure—and at the proper normal exposure it will supply you with more shadow detail than Kodachrome (also exposed normally). With Kodachrome II there is an additional bonus in the highlights. $D \log E$ curves indicate that it has more inherent contrast in these areas, thus producing cleaner highlights. In addition, the closeness of layer sensitivity and the color purity of Kodachrome II permit more error in overexposure before colors are completely washed out.

Exposure latitude

In a technical sense there is virtually no exposure latitude in a reversal film since any change of exposure will produce a different result. But there is a range of under- and overexposure which will produce acceptable results—the extent of which depends upon the observer and what he is willing to accept. In this sense, Kodachrome II exhibits more exposure latitude than Kodachrome, both in under- and overexposure.

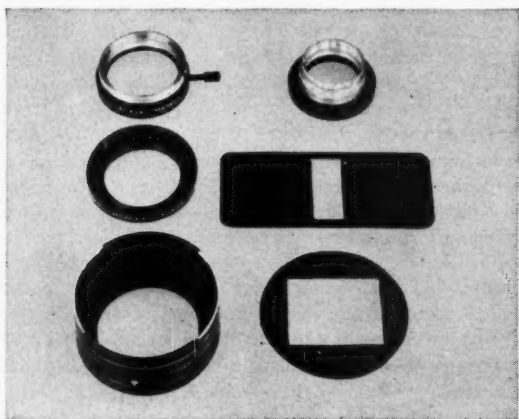
Spectral sensitivity data for both films (Figure 1) range into the ultraviolet (below 380 millimicrons) and to a much lesser extent into the infrared (above 700 millimicrons). Crossovers in sensitivity result in a degradation of the predominant color. Since there is a greater height of the Kodachrome II curves from the point of crossovers as compared to the Kodachrome curves, Kodachrome II is shown to produce purer, more saturated yellows and greens. Practical tests proved this to be true. There is a relative reduction of magenta in the yellow region is the reason for Kodachrome II's producing more true-to-life skin tones. In addition, these curves show that Kodachrome II produces purer reds and greens.

No color film can make an objectively accurate record of a scene, and Kodachrome II is no exception. But the combination of more suitable contrast, color sensitivity and balance makes Kodachrome II an improvement over the present Kodachrome, objectively. Subjectively, there may be some complaints. As suggested in the May MODERN, the colors and shadows produced by Kodachrome II are less posterish, and after all, some people like these posterish qualities. Unfortunately, you can't please everybody. However, we do think that Kodachrome II is a fantastic improvement over a superb color film.—THE END

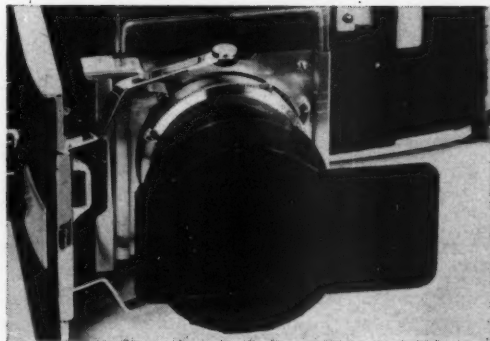
Editor's Note: This story was prepared by the Editors of MODERN's sister magazine PHOTO METHODS FOR INDUSTRY. Original technical research was supplied by Eastman Kodak Company.

MULTI-EXPOSURE WIZARD

YES, THEY'RE ALL THE SAME CHILD, AND IT WAS DONE ON A SINGLE POLAROID PRINT. LAURIE SEAMANS MAKES PICTURES LIKE THESE WITH AN OLD POLAROID LAND CAMERA, A SIMPLE HOME-MADE GADGET, AND PLENTY OF INGENUITY. HERE WE TELL YOU HOW TO MAKE THE MULTI-EXPOSURE DEVICE AND HOW TO USE IT SO YOU CAN DO LIKEWISE. . . . by John Wolbarst



Laurie Seamans made this amazing quintuple exposure with a matte box she designed and molded herself. Being less ambitious, I assembled the unit shown from these ready-made items: Left front, Tiffen Series 7 lens shade; left center, Series 6 to 7 step-up ring; left rear, #655 adapter ring to fit lens mount of Polaroid Pathfinder shown. For other large non-electric eye Polaroid models use Series 5 to 6 step-up ring joined to Series 5, 32mm adapter ring as shown, right rear, instead of #655 ring. Slide and front mask were cut from old black plastic slide for 4 x 5 cut film holder. Mask is 2 3/4 in. in diameter, has 2 x 1 1/2 in. opening, is secured to lens shade with black tape. Slide is 4 1/4 x 1 7/8 in., has 1 1/2 x 5/8-in. slit, moves in shallow channels filed in front edge of lenshood. This slit is OK for double exposures over full width of print, which is about all you can do with enclosed viewfinders on recent Polaroid cameras. For complicated compositions, such as above, old style wire frame-finder is necessary.





MODERN'S EDITORS couldn't believe their eyes the first time they saw the original of this picture. It was one of a whole set of equally puzzling Polaroid prints sent in by Mrs. Paul T. Seamans, an attractive young housewife of Gill, Mass., whose charming Polaroid pictures have appeared in MODERN at various times.

That she could be the mother of twins we could accept easily. Triplets? A bit out of the ordinary. Quadruplets? Extraordinary! But quintuplets? So, right away the long-distance phone was busy to find out how in the world she did it.

Laurie Seamans had simply made herself a matte box. That's a device that looks like an outside lens hood with a sliding front door. It fits over the front of the

camera (it's generally used for movies) and allows you to divide up the scene so as to selectively expose various parts of the film.

Laurie took a coffee mug and about 10 cents worth of plaster of Paris and molded and carved her own, which she then painted black. For the slide she cut a piece from a vinyl phonograph record. And it was with this outfit that she turned out her astonishing pictures.

We decided that for this story we would get up a similar gadget that did not require the skills of a sculptress and was less likely to disappear into fragments if dropped. The matte box shown was made up from a standard lenshood and adapter rings. However, you can make one from bits and (Continued on page 98)

THINK SMALL

TURN YOUR MINIATURES, MODELS AND TOYS INTO TABLE-TOP MOVIE MATERIAL

IN A HOBBY that abounds with clichés, table-top photographs probably win the prize as the greatest cliché of all time. One reason is that the subject material is often cloyingly cute. But the main reason is that they are made with still and not movie cameras. A still camera shot of a table-top subject—toy dolls, or other miniatures—is usually as lifeless as its subject. But a motion picture camera—used with imagination—can take a completely inanimate object and make it come alive. You can create images which excite viewer interest because they are full of movement.

And table-top movies will give your audiences a change of pace from the usual home productions, since there are at least three ways to use table-top arrangements in your films.

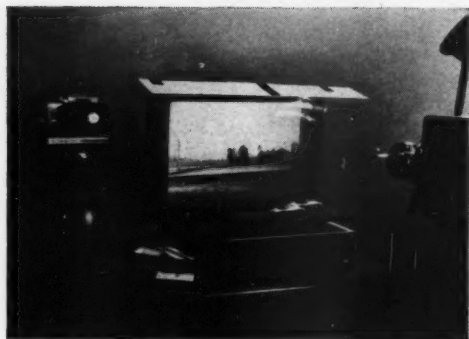
First, you can make a complete table-top movie using your youngsters' toys.

Secondly, you can use table-tops as opening titles to regular movies. For example, you might shoot an electric train chattering along the tracks as the beginning of a birthday movie.

Third, you can use table-tops to supply continuity between scenes in a live movie. For instance, a short scene of a drooping doll could be intercut between scenes of a child playing boisterously and then of her falling asleep as mother puts her to bed.

Table-tops can be shot by using either continuous run or single-frame techniques. Powered toys—cars, airplanes or trains—supply their own movement and therefore can be shot at regular fps speeds. Dolls, or other non-powered toys, can be animated by using single-frame as outlined in these four pages.

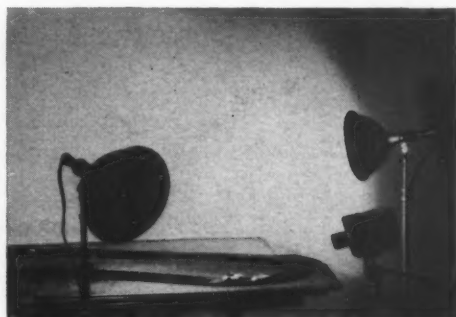
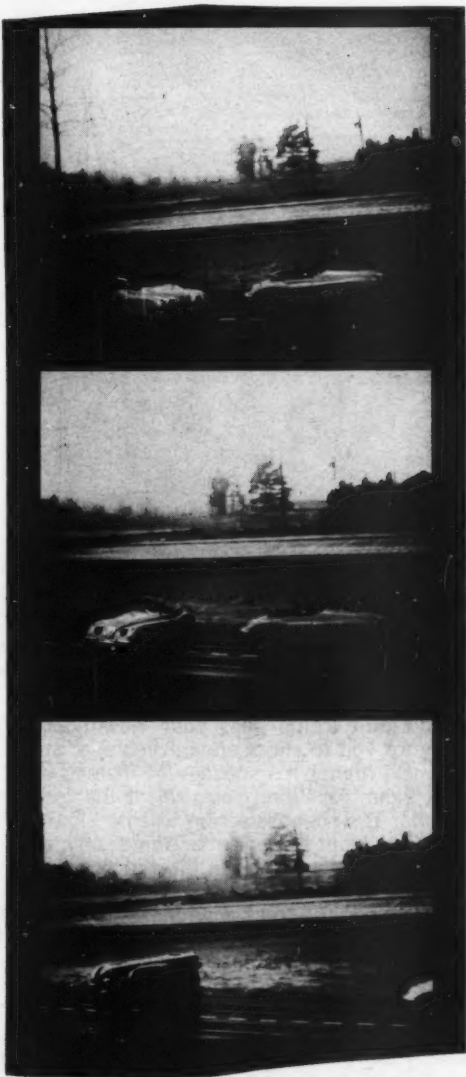
You need only the equipment you already own—movie camera, lights, and a tripod. Almost any flat surface will do admirably for table tops.—M.A.M.



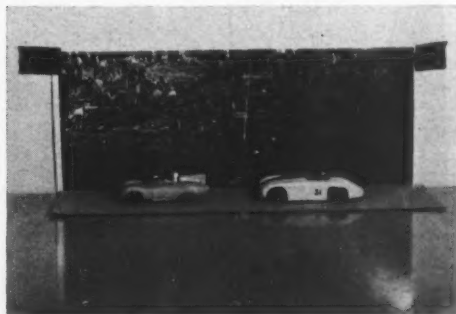
BACK PROJECTION: Your still camera slides make good animation backgrounds. Projector is aimed at ground-glass screen shielded by cardboard at top. Single photo-flood or barlight can be bounced off ceiling to supply light for foreground objects—cars in this case. Fast color film—Kodachrome II for 8mm, Anscochrome or Ektachrome E R for 16mm—provides best results. Be sure to change backgrounds to create greater audience interest. Single-frame technique required here is explained in caption above right. Black-and-white prints and travel posters also can be used for backgrounds.

MAYNARD FRANK WOLFE

SINGLE-FRAME: Cars below seem actually to move when film is projected. Single-frame animation does it. Switch your camera to single-frame. Move the subject or, as in the case below, the two subjects the same distance across the scene. Make a single-frame. Repeat until the action is complete. Speed of action on the screen is determined by amount subject is moved. For fast action, as below, cars are moved their complete length each time when action is from left to right. For spinout, as shown, $\frac{1}{4}$ -in. movement taking about 32 frames (at projection speed of 16 fps) shows action slow enough for audience to understand.



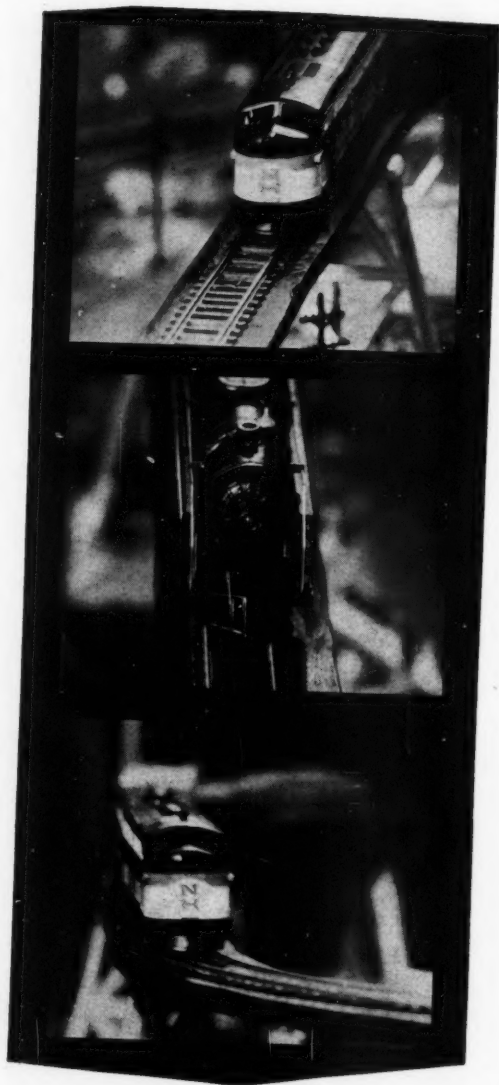
LIGHTING: Two floodlights, a barlight, or one of the new single light units (G.E., Sylvania, Westinghouse) are enough for most table-tops. Keep lights at same angle and distance from the subject.



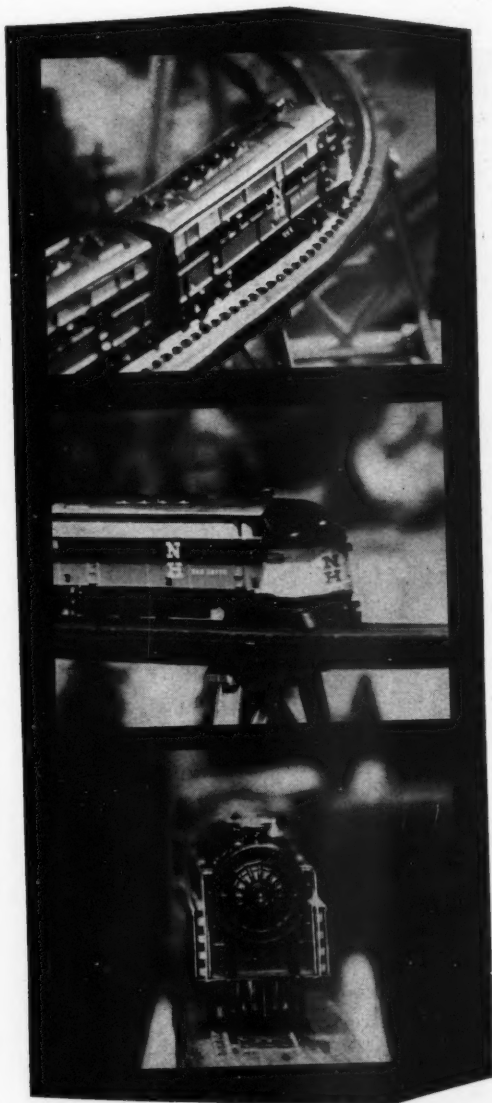
PHOTOGRAPHS: Tape photographs to a convenient wall and use them as backgrounds in the same manner as slides on opposite page. But unless photos are large or cars tiny, they won't provide area for long shots.



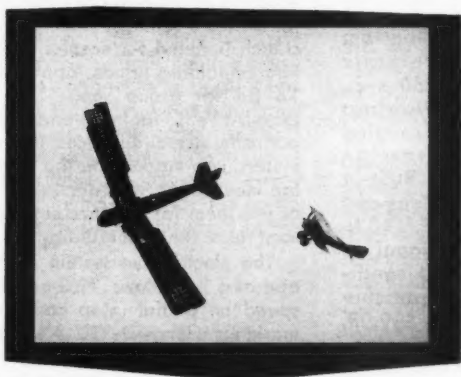
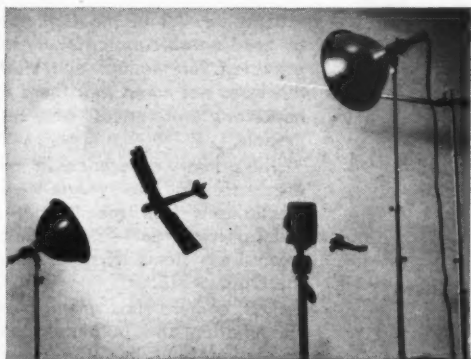
BLURRING: Power toys, like the Aurora Model Motoring set above, can be filmed at regular speeds. Scene above was purposely blurred to heighten feeling of speed by shooting at slower than normal fps rate.



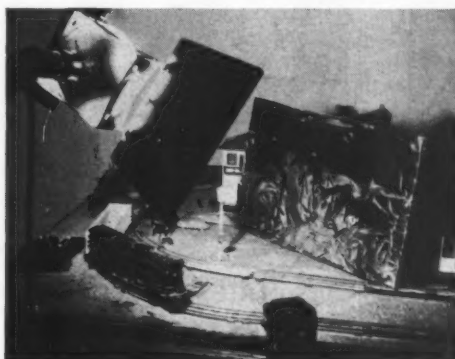
CUTTING: Shots of long screen duration can be dull. You want as many varied images as you can create to sustain audience interest. In shooting model trains, you might start out as we did, above, by showing two separate trains going in the same direction. At the end of the second shot we have one train changing direction, going from the right side of the screen to the left. In the third cut the other train begins to turn. As we cut back and forth between the trains, suspense is built up. The cuts produce the effect of trains hurtling toward each other. Then, show both trains passing safely by. If we'd had a really sturdy set of trains, we might have simulated a crash. The cuts can be fairly brief—no more than four or five seconds. But in addition to quick cutting, vary the camera-to-subject angle. Incidentally, if



you find that trains pass your viewfinder too quickly for you to shoot enough footage, switch to the next higher fps speed—24 instead of 16 fps for example. When you project the footage at regular fps speeds, action will be slowed to provide sufficient screen time. Conversely, quick shots showing the trains in blurred outline can be equally effective. Zooming into the train as it speeds along the tracks can make an excellent sequence, too. You might end your zoom so that only the drive wheels fill the viewfinder. If your lens won't focus close enough for zoom shooting, see MODERN, April 1961, for information on using close-up lenses with your zoom camera. A solidly built elevator tripod can be useful for shooting high-angle shots of hard-to-get-at areas of the train board.



ACTION: There's one problem with model planes: Since they're supposed to fly they must be suspended so that they can be filmed either by single-frame techniques or at regular fps speeds. In the top illustration, wires that blend into the wall background when filmed were used to hold the planes. Wires were connected to each wingtip and the top of the body. Wires can be released a little at a time and reset for single-frame animation. However, this method requires fairly long shooting sessions for complete sequences. A helper can move the planes slowly by standing out of camera range and moving the wires. For best effect, shoot at slow motion speeds 8 to 40 frames faster than you normally shoot. Lights should be arranged as shown to cast shadows outside of the camera viewing area. If you use a bar-light, supplement it with an additional photo-flood. Also, lights can be bounced off ceiling and walls to eliminate shadow problems. It is also quite possible to create short, interesting sequences with the planes virtually motionless. Cut from long shot to medium shot to close-up quickly. The slight quiver of the suspended planes will add just enough subject movement to give the footage a feeling of action. Taxiing can be animated by moving the plane along the top of a table. Use regular single-frame technique.



REFLECTORS: In many instances you won't be able to use many lights. Using a silver foil reflector to bounce light from a single flood into deep shadow areas is one solution.



HEAD-ON: Placing your camera in the way of a fast moving freight (even a small one) can be dangerous. Make head-on shots with camera positioned near a curve.



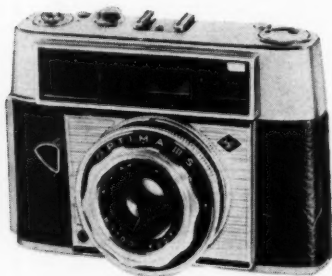
DOLLY: For a shot from the train itself you need a flat board that will fit snugly on top of a freight car. Drill a hole in the board for a tripod screw to hold the camera in place.

MODERN TESTS

NEWEST CAMERAS • LATEST FILMS • IMPORTANT ACCESSORIES

MODERN PHOTOGRAPHY'S exclusive monthly equipment report devoted to informative, unbiased field tests of production models submitted to and passed as acceptable by our technical department.

AGFA TURNS OPTIMA INTO AUTOMATIC TRIO



Manufacturer's specifications: Agfa Optima IIS rangefinder electric eye 35mm camera. Lens: 45mm f/2.8 Agfa Color Apotar with stops to f/22, focusing to 3 1/2 ft. Shutter: Compur-Special with automatic speeds from 1/30 to 1/500 sec., plus B and flash setting. Viewing: Bright-line frame finder, coupled rangefinder, automatic parallax correction. Other features: Built-in exposure meter coupled to lens and shutter-speed controls for E.I. 10 to 250; constantly operating red/green optical signal in viewfinder indicating if there is enough light for exposure. Price: \$124.50, case \$11.85. Importer: Agfa, Inc., 516 W. 34 St., New York 1, N. Y.

Manufacturer's specifications: Agfa Optima IIS rangefinder electric eye 35mm camera. Lens: 45mm

f/2.8 Agfa Color Apotar with stops to f/22, focusing to 3 1/2 ft. Shutter: Prontormotor with automatic speeds from 1/30 to 1/250 sec., plus B and flash setting. Viewing: Bright-line frame finder, coupled rangefinder, parallax correction marks. Other features: Built-in exposure meter coupled to lens and shutter-speed controls for E.I. 10 to 250; red/green optical signal in viewfinder indicating light conditions activated by slight pressure on shutter release. Price: \$99.95, case \$11.85. Importer: Agfa, Inc., 516 W. 34 St., New York, N. Y.

Manufacturer's specifications: Agfa Optima I non-rangefinder electric eye 35mm camera. Lens: 45mm f/2.8 Agfa Color Agnar with stops to f/22, focusing to 3 1/2 ft., clickstop focusing positions marked on lens mount. Shutter: Prontor-Lux with automatic speeds from 1/60 to 1/500 sec., plus B and flash setting. Viewing: Bright-line frame finder, parallax correction marks. Other features: Built-in exposure meter coupled to lens opening for E.I. 10 to 100; red/green optical signal in viewfinder indicating light conditions activated by slight pressure on shutter release. Price: \$59.95, case \$9.95. Importer: Agfa, Inc., 516 W. 34 St., New York 1, N. Y.

The original Optima camera introduced in 1959 operated on the electric eye principle. But in order to activate the automatic exposure mechanism, you had to depress a lever on the left-hand side of the lens mount before making the exposure. Each of the members of the new Optima family is completely automatic: all you have to do is set the focus and shoot.

These cameras are similar in construction. Important controls—focusing (by turning lens mount), rapid-

advance lever (on camera back operated by right thumb), range- and/or viewfinder (left), rewind knob (top left)—are identical and equally easy to operate. All of the Optimas must be used on automatic, for there is no provision for manual operation. But this does not mean that there are no important differences between the models.

The primary differences in the cameras are in the range-viewfinder mechanisms (see specifications) and—most important—in the automatic exposure systems. First let's examine the Optima IIS.

This camera has a high-contrast rangefinder and automatic parallax correction built into the viewfinder. Atop the lens mount are three symbols for distance settings: mountains and a church (infinity) for scenic; three full figures holding hands (approximately 14 ft.) for group shots; two heads (about 6 1/2 ft.) for head-and-shoulders portraits. Actual distances, in feet and meters, are marked on the bottom of the lens mount. In order to see them, or use them for distance settings, you must turn the camera upside down.

The electric eye system in the IIS operates as follows. First set the film speed on a dial (atop camera) with markings from 10-250 ASA. As the light level increases, both shutter speed and aperture change on a continuous scale to give the proper exposure for that film speed. However, the shutter speed increases at a greater rate than aperture decreases, and by the time the aperture has reached f/8, the shutter has already attained its maximum speed of 1/500 sec. As the light level increases further, the aperture continues to decrease until it reaches f/22. The actual mechanism controlling exposure is in continuous operation, and does not have to be activated by depressing the shutter release. Whenever you point the camera at a subject, the red/green stop/go indicator in the viewfinder tells you if there is sufficient illumination for proper exposure.

The Optima IIS also has a range-viewfinder, the same symbols for three distance settings atop the lens mount, and actual distances beneath it. Parallax is corrected by means of marks in the viewfinder. Here, as the light level increases, shutter speeds increase in full steps until the maximum speed of 1/250 second is reached. Then, and only then, does the aperture begin to decrease, continuously from f/2.8 to f/22.

In the Optima I, setting the film speed automatically fixes the shutter speed. Thus only the lens opening is operated by the electric eye system.

The advantages of the IIS over the IIS and of the IIS over the I are obvious. With the first two cameras, you can shoot in lower light with a fast film than with the I, since with that camera using a film with an index of 100 automatically fixes the shutter speed at 1/500 sec. rather than allowing it to operate the full range up from 1/60. The "choices" built into the shutter on the IIS most closely approximate those which would be made by an intelligent person operating the camera manually: it is unlikely, except in very unusual circumstances, that one would elect to shoot at the very widest aperture and the very highest shutter speed, which will be the settings for certain light levels selected by the IIS.

All three Optimas produced well-exposed Kodachrome transparencies in a variety of outdoor lighting situations; black-and-white enlargements to 11 x 14 from Plus-X film appeared sharp from corner to corner, indicating a lens quality more than good enough for taking snapshots. One suggestion for future Optimas: that carrying strap lugs be incorporated in the bodies.—P.C.

MINOLTA SR-3 HAS A COUPLED METER



Manufacturer's specifications: Minolta SR-3 35mm single-lens eye-level reflex. Lens: 55mm f/1.8 Auto Rokkor with stops and half stops to f/22, focusing to 18 in. Shutter: Cloth focal-plane with speeds from 1 to 1/1000 sec. plus B, FPX sync. Viewing: Non-interchangeable eye-level prism with split-image rangefinder and full ground glass, Fresnel lens. Other features: Automatic diaphragm reopens with film wind; instant-return mirror; provision for accessory photoelectric exposure meter coupled to shutter-speed dial; rapid wind, rewind levers; auto resetting exposure counter; also available are adapters for Exakta and threaded Leica and similar lenses. The latter

for close-ups only. Price: \$199.50 without case or meter. Importer: Minolta Cameras, 150 Broadway, New York 38, N. Y.

Although it plays havoc with the sequence of things, the SR-3 is actually a far closer relative to the recently introduced \$169.50 Minolta SR-1 than to the older, more expensive (\$249.50) Minolta reflex, the SR-2. Like the SR-1, the Minolta SR-3 has the equally spaced non-rotating shutter-speed dial which you needn't lift up to set, the sharp and clear-to-the-corners, Fresnel-brightened ground glass with lines so fine you can barely see them at all, the improved, smoother and more gently acting top shutter release, the easier-to-thread takeup spool. But instead of the 55mm f/2 lens, standard on the SR-1, the SR-3 has the 55mm f/1.8 lens, and its top speed is 1/1000 sec. rather than 1/500. In common with both other models the SR-3 is excellently finished and smoothly designed, with a sensibly shaped, well-gearred, long-throw, single-stroke rapid wind lever. The rewind lever, standard on all Minolta reflexes, is well proportioned and easily rotated. The Minolta reflexes remain one of the easiest camera designs to open after rewinding. Pull upward sharply on the rewinding lever and the back swings wide.

The new SR-3 also shares with the older models the rather distinctive and decisive shutter release noise. While there was some talk that the SR-3 was less audible, we noticed no change in decibels but did detect a distinct alteration of tonal value, down a half octave, I think. While the impressive click does seem to cause camera jar, a careful check indicated that this was caused by the return of the mirror, which occurs after the shutter is closed.

Two of the SR-3's outstanding assets (in our opinion) are the non-interchangeable split-image rangefinder and the 55mm f/1.8 Auto Rokkor lens. The top 1/1000-sec. speed as an asset is debatable.

The split-image rangefinder, one of the very best on any focal-plane-shutter reflex, shows a clean, sharply divided subject, the halves of which split quickly and align with assurance as you twist the smooth, well-knurled focusing ring the 4/5 of a turn from 18 in. to infinity. The Minolta ground glass shows an image slightly smaller than life size. At a medium distance from the eyepiece, it can just be seen in its entirety by eyeglass wearers.

The \$25.50 accessory meter is quite compact. It pegs easily into small holes in a plate on the camera front. There it squats nicely over the shutter-speed

dial, with a cutout cam engaging a lug atop the dial itself, thus coupling the meter to the shutter-speed setting. The meter is well out of operational way. The dial turns easily, shifting the shutter speed automatically when you line up the aperture scale with the proper broad bands opposite the needle. The exposure index scale is commendably complete, stretching from 6 to 3200. The meter has a dual range which can be changed by turning a small wheel on the side.

While the meter movement itself appears to have more than adequate sensitivity and accuracy, the calculator markings are insufficient. There are only 8 very broad band positions to match up. Each band covers a great range of lighting intensity. In the low sensitivity end, which you'd use in poor light, there's quite a big chance of error, particularly when the narrow latitude of color film is involved.

The soft leather ever-ready case (\$15) is less bulky than the traditional hard leather cases. The detachable front closes with the meter in place. The camera body part of the case, attaches with the usual tripod anchor screw but has no leather carrying strap of its own. Instead, a seamed adjustable leather carrying strap attaches by split rings directly and securely to the carrying lugs of the camera. It's an excellent setup.

Our original estimate of the 55mm f/1.8 Auto-Rokkor (reported in "Modern Tests," May 1959) stated that "... the 55mm f/1.8 Auto-Rokkor was exceedingly sharp at full aperture even at the edges, and reached its greatest overall sharpness at a point between f/5.6 and f/8." We see no reason to alter this estimate.—H.K.

RICOHMATIC 35 ADDS FOCUSING TO THE AUTO

Manufacturer's specifications: Ricohmatic 35 35mm electric eye rangefinder camera. Lens: 40mm f/2.8 Riken with unmarked (automatic) stops to f/22, focusing to approx. 3 1/2 ft. Shutter: Seikosha with unmarked (automatic) speeds from 1/30 to 1/250 sec., plus MX sync, self timer. Viewing: Bright-line framefinder with coupled rangefinder and parallax correction marks. Other features: Built-in exposure meter, coupled to lens and shutter-speed controls, for E.I. 10 to 200; low-light warning signal in viewfinder window; flash calculator; left-hand rapid wind lever on camera bottom; frame counter returns to zero during rewind. Price: (Continued on page 84)

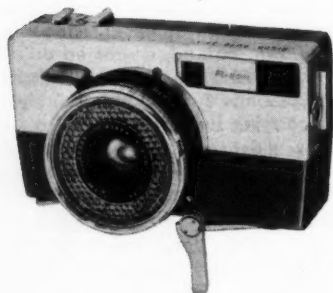
MODERN TESTS

(Continued from page 83)

\$69.95, case \$10.50. Importer: Interstate Photo Supply Corp., 300 Park Ave. S., New York 10, N. Y.

At first sight, the Ricohmatic 35 looks the same as the Ricoh Auto 35, which we reported on in the February 1961 "Modern Tests." The body is the same, and what we said about the compactness and ease of handling of the Auto 35 applies equally to the Ricohmatic 35. The main differences are (a) the addition of a focusing mount, rangefinder and self timer, (b) a different shutter program, and (c) modifications to the film-speed and flash-setting systems.

The focusing ring is broad and easy to turn, but you must take care not to



obstruct the rangefinder window with your fingers. The rangefinder image is acceptably bright except in low-light conditions.

Whereas the Auto 35 operated at a fixed shutter speed for each film speed, and the automatic exposure system controlled only the lens aperture, the Ricohmatic 35 has a program in which the lens aperture and shutter speed change together, from 1/30 at f/2.8 to 1/250 at f/22.

There is the same flash-setting lever on the lens mount as on the Auto 35—it takes the camera off automatic and sets one of three f-numbers at a fixed shutter speed of 1/30 sec. But the lever on the Ricohmatic 35 is keyed to a revolving-dial calculator on the camera back, which in turn is color-coded to match markings on the focusing ring. Thus, although there are no distance markings on the focusing ring, you can quickly determine the best aperture setting for a particular M flashbulb at any particular distance.

With the camera on automatic we found that the automatic exposure

system produced well-exposed color transparencies in situations where an overall exposure reading was suitable. Some 11 x 14 enlargements that we had made from black-and-white negatives showed that the lens is excellent for snapshots.—W.H.J.

IMPROVED VERSION OF KONICA ZOOM 8

Manufacturer's specifications: Konica Zoom 8 Model II semi-automatic electric eye 8mm movie camera. **Lens:** 12 to 32mm f/2 V-Hexanon zoom lens, focusing to 3 ft. **Viewfinder:** Through-the-lens reflex system with behind-the-diaphragm beamsplitter. **Focusing:** Full ground glass. **Fps:** 16, 24, 48 (with booster), and single-frame. **Other features:** Electric motor drive, semi-automatic electric eye (for E.I. 10 to 160), battery tester, backwind, adjustable eyepiece, manual frame counter, and manual setting footage counter. **Price:** \$229.95. **Importer:** Konica Camera Co., 76 W. Chelton Ave., Philadelphia 44, Pa.

The lens and shape of the Konica Zoom 8 Model II are similar to the original Konica Zoom 8—but that's where the resemblance stops. While the original Konica was an excellent movie making machine, improvements and modifications make the Model II easier to use and a lot more versatile than the original.

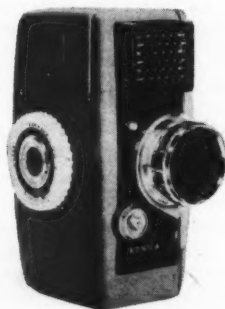
The compactness—the lens extends no more than 3/4 in. from the front of the camera—has been retained. Most of the lens is inside the camera. The knurled focusing ring has been enlarged, making it easier to use. As in the older model, film is loaded in back of the camera, since the zoom lens is situated mostly inside the camera.

The most noticeable change in the Konica is that the main controls—f-number, fps speeds, exposure index, and footage counter—are grouped in concentric rings on the right side of the camera. There's much more operating room than on the older model, where it was sometimes possible to dislodge one setting while making another. The footage counter has been changed from the previous feeler type to a geared manual setting type.

Other major improvements are inside the camera. The cutout at the top of the film chamber has been reshaped to make drop-in loading easier.

Most important, the film gate and pressure plate have been redesigned. In the older model, the pressure plate was actually part of the film chamber door. After the film was loaded in the gate, the door was closed to engage the pressure plate. In the Model II, the pressure plate is mounted on a hinged back connected to the gate. You close the back to bring the pressure plate in contact with the film, then close the door. Also, the gate has been lengthened from 2 3/4 in. to 3 1/8 in. for even better registration than in the original camera.

Our tests indicate that the new motor comes to speed within a fraction of a second. When you start to press the release, power is fed to the motor. However, the motor is held in check by a brake. The brake releases



when the button is fully depressed. The system overcomes much of the inertia usually present when you start shooting because the Konica starts on full power. We found that film is transported at a consistent 16 or 24 fps. A new accessory booster—which also serves as a remote control unit—is required for 48 fps shooting. Without the booster the 48 fps setting provides a speed of 32 fps.

A backwind and adjustable frame counter has been added to the Model II. The backwind consists of a key-like control that rewinds 16 frames for each complete revolution.

The semi-automatic electric eye diaphragm can be completely closed to make lap dissolves. The film stops transporting when the diaphragm control is turned to "C" (closed), even though the motor continues to run.

In the Model II, the through-the-lens focusing and viewing eyepiece may be adjusted to the individual eye. However, we found the viewfinder image in the new model slightly less bright than in the older one. Even so,

the Konica remains the easiest ground-glass reflex 8mm camera to focus.

Since the beamsplitter (which sends part of the light entering the lens to the viewing eye) is positioned behind the diaphragm, there's a decrease in brightness as the diaphragm is closed, normal for this type of finder. However, even indoors, we were able to see the image clearly at openings as small as $f/11$. Outdoors, we had no difficulty viewing at $f/16$ and even $f/22$ when required.

The shutter release has been moved to the front of the camera and changed to a button-type. The older model had a pull-down slide which could accidentally be locked on continuous run. Single-frame and continuous run positions are controlled by a ring surrounding the shutter release button. A cable release socket is placed inside the shutter release.

The electric eye indicator needle, which also serves as the battery tester for the electric motor drive, has been moved from a window outside the camera to inside the viewfinder. Changing aperture while you shoot to meet varying light conditions (during a pan, for example) is now possible.

The lens on the Model II is identical with that which we tested on the original Konica (September 1959). At that time we noted that the lens itself proved slightly unsharp at the edges of the frame when used at maximum aperture ($f/2$). However, sharpness proved adequate at $f/2.8$ and really good at $f/5.6$.—M.A.M.

ANOTHER LEICA— THIS ONE FOR MOVIES

Manufacturer's specifications: Leica 8S automatic electric eye movie camera. Lens: 15mm $f/2$ Dygon fixed-focus. Viewfinder: Through-the-lens viewing with beamsplitter behind the diaphragm. Focusing: Full ground glass for converter lenses only. Fps: 16 and single-frame. Other features: 4-penlight electric motor drive; cadmium sulfide cell electric eye from E.I. 6 to 400; manual control battery tester; electric motor backward; f-number and automatic footage dial inside finder; folding handle; single-frame and continuous run cable release sockets. Price: \$267, including wide-angle converter. Importer: E. Leitz, Inc., 468 Park Ave. S., New York 16, N.Y.

The Leica 8S is a superbly built 8mm roll film movie camera with not an excess bolt, piece of chrome, or unnecessary line in its rectangular-

shaped body ($5\frac{3}{8} \times 3\frac{3}{8} \times 2$ in. and about 2 lb. 2 oz.). Although it's much in the Leica tradition of fine 35mm cameras, a beginner can pick it up and shoot after adjusting only the exposure index, and be reasonably sure of adequate results. At the same time, the Leica has several features that should also appeal to the advanced amateur.

The construction of the Leica is unusual. The camera consists of three stages or sections. One section is the film chamber cover on the left side of the machine. It contains the rear part of the viewfinder and comes off the camera by flipping up a fingertip latch and sliding back. The second section or stage consists of the right side of



the camera. Undoing a retaining screw lets you lift the whole right side off to reveal the third stage.

This third stage contains most of the working parts of the Leica—battery case, motor, electric eye system, film transport, beamsplitter and lens. Everything looks—and is—easy to get at for cleaning and repairs.

The Leica is well balanced. It's not a camera that requires much handling before you feel confident with it. The snap-down handle provides a firm grip while the head rest at the rear of the camera adds additional support where you need it—right above the eye. This method of steady-ing is a good one, which can be demonstrated in hand-held test footage. Our screen image exhibited comparatively little vertical bounce.

You can't use the fingertip release button with the handle folded. This protects you from accidental exposure while the camera is in a gadget bag. At the same time, should you use a wall for camera support (with the handle folded), for example, you must use a cable release.

The shooting handle also covers the rewind button when it's folded against the camera body. Thus, even though the camera is mounted on a tripod, the handle must be extended if you

want to rewind film for a lap dissolve or other special effect. If the handle is folded against the body while the camera is tripod mounted, you must remove the camera from the panhead, rewind the film, and then replace the camera.

Although the viewfinder system's beamsplitter is located behind the diaphragm, the viewfinder image remains bright from corner to corner at practically all apertures. Two things contribute to this. The finder is equipped with an extremely fine ground-glass screen. Secondly, the lens is somewhat faster than indicated on the lens barrel, about 20 percent faster, according to Leica. Thus, the amount of light passing through the finder from the beamsplitter is rather high.

The finder image is about 40 percent larger than life size with the normal lens. Some eye-glass wearers had trouble with the finder. Comments ranged from "I can see only two corners of the image without shifting my eye" to "There's some corner cut-off, but it doesn't bother me."

Naturally, you can't focus with the normal lens. But we found the ground-glass screen too fine for critical focusing with the wide-angle converter. We never seemed to be able to get the camera-to-subject distance indicated on the lens to match the measured distance. However, depth of field at most openings is sufficient to get an adequately sharp image.

The adjustable eyepiece has no markings. This can be a problem when the camera is used by several people. If you lend your Leica to a friend whose viewing eye requires a different setting, you'll have to readjust it.

The electric eye system uses a cadmium sulfide (CdS) cell powered by a tiny mercury battery. By turning the rim of the cell window you set the exposure indexes. You can, however, switch to manual operation, and underexpose two stops or overexpose three stops. Leica designers early realized that an electric eye exposure system can't do all the thinking for you. They arranged the electric eye system so that it operates even when you've set the camera manually. As you shoot, the electric eye keeps the degree of under- or overexposure constant—no matter how the light changes.

In testing this normal, fixed-focus lens and camera, we found that it provided very sharp images at all apertures. In fact, it was much sharper at all apertures than one could normally expect from a fixed-focus lens. The wide-angle converter, by comparison, appeared a bit soft even at $f/5.6$ to $f/8$.—M.A.M.

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LAUGHLIN PICTURES

(Continued from page 61)

to date: to create a mythology from our contemporary world, to project the symbolic reality of our time, so that the pictures become images of the psychological substructure of confusion, want and fear which led to the two great World Wars. In our society, most of us must wear masks of various kinds and for various reasons. Very often the end result is that the masks grow to us, our assumed characters displacing our original characters. This process is indicated here in visual and symbolic terms (by several exposures on one negative), the disturbing thing being that the mask is like the girl herself grown harder and more superficial.

The physical object, to me, is merely a stepping-stone to an inner world where the object, with the help of subconscious drives and focused perceptions, becomes transmuted into a symbol whose life is beyond the life of the objects that we know and whose meaning is a truly human meaning. For by dealing with the object in this way, the creative photographer sets free the human content of objects.

Therefore, everything that I see must become personal. Otherwise it is dead and mechanical. Our only chance to escape the blight of mechanization, of acting and thinking alike, of the huge machine which society is turning into, is to restore personal life to all things through the saving and beneficent power of the human imagination. This is my personal belief, my hope for humanity, and the power which enables me to continue my work under difficult conditions and despite the indifference and lack of recognition by the people who have set themselves up in this country as the arbiters of "modern" photography.

—CLARENCE JOHN LAUGHLIN

BEHIND THE SCENES

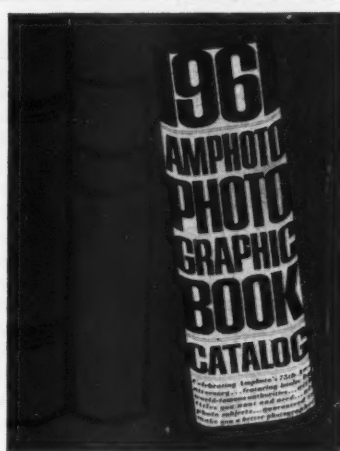
(Continued from page 48)

It has a revolving film chamber. Once the first 25 feet is run through the camera, a mechanism halts the advance and various protective devices seal in the chamber against exposure. The user rotates the film magazine 180° and in seconds after finishing the first 25 feet he's ready to shoot the second half. This new camera will have a 3:1 f/1.8 zoom lens, cadmium-sulfide-cell-controlled electric eye exposure system and through-the-lens focusing system.

Ends and beginnings

Zeiss is officially discontinuing the Contax IIA, IIIA. DuPont-Bell & Howell alliance will market 8mm, 35mm Kodachrome-type film in '62.

—H.K.



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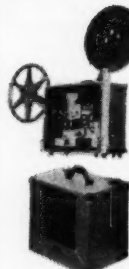
(Continued from page 56)

rectangular-shaped electronic flash reflectors of modern design. Whenever this defect occurs it fortunately can easily be remedied by using one layer of matte acetate sheeting over the reflector. This certainly causes some loss of light output, but the guide number generally remains reasonably accurate even at very short distances. If necessary, run a test. Once a new guide number has been determined by test exposures you will get consistently good results with these reflectors when using the lamp-to-subject distances determined from the charts. But don't get your flash closer than one foot from your subject.

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(Continued on page 90)

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AUTOMATIC CLOSE-UPS

(Continued from page 88)

focal length you get the same depth of field as with a lens of short focal length, providing the magnification is the same. (Use chart 3 to calculate depth of field.)

In spite of this, two photographs made with different focal-length lenses will show marked differences. With a lens of long focal length, image sharpness falls off very rapidly beyond the zone covered by depth of field. Even with such a lens closed down considerably, the background will dissolve almost completely, thus isolating your subject from what might be distracting details.

Now let's see how we can fasten the flashlamp reflector to the camera. The lamp should be somewhat above the optical axis of the camera and as close as possible to the side (see photograph



For automatic close-up work, Eisenbeiss uses a 2 1/4 x 2 1/4 Praktisix or 35mm Leica, bellows, double cable release to actuate home-made automatic diaphragm on 135mm f/4 Leitz Hektor lens. With speedlight unit attached, it's fast, compact, portable.

above), and its distance from the film plane should be about equal to the focal length of the camera lens. The lamp need not be aimed at the subject, but the optical axis of both the reflector and the lens should be parallel to each other. This is to minimize the fast fall-off of illumination to the background.

In shooting close-ups on black-and-white film I use a Leica with a Visoflex housing and focusing bellows. For this work I load my Leica with slow-speed films such as Adox KB-14 and Agfa Isopan FF. For color I use either the Leica with Kodachrome or a Praktisix 2 1/4 x 2 1/4 reflex with Agfacolor CT-18 or Ektachrome Professional (E-3). With both cameras I use a 135mm f/4.5 Leitz Hektor equipped with a home-made automatic diaphragm (see photograph on page 92). The Leitz focusing bellows has reproduction scale markings on its tracks reading 0.1, 0.2 . . . 0.9, 1.0. In the range from 0.2 to 1.0 you can use the same f-number, which has to be determined only once by test exposures.

(Continued on page 92)

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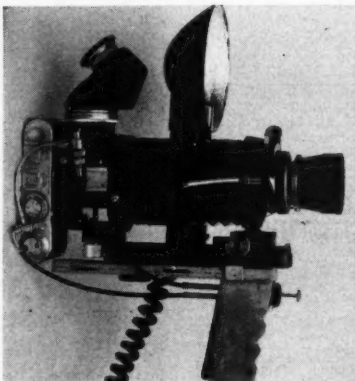
(Continued from page 90)

Many other bellows units have similar markings. If your bellows has no such scales, you must first determine, by test exposures, the range in which the f-value can be kept constant. As already explained, it may be necessary with some electronic flash units to use a layer of matte acetate sheeting over the reflector. Make test exposures with and without such a diffuser and compare the results.

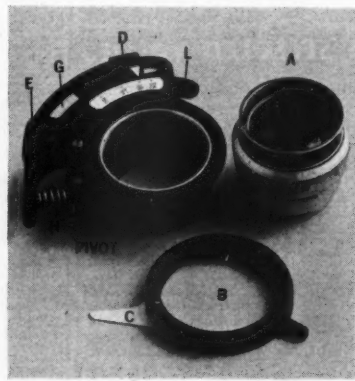
Does this all sound rather complicated? It may, but once the proper f-value has been determined by test exposures this method does produce correct exposures automatically with no further calculations. (The only extra adjustment you need make is in shooting unusually dark or bright subjects, which will require you to open up or close down $\frac{1}{2}$ f-number.) Since you needn't worry about technical details, you can concentrate exclusively on your subject.

Summing up, it can be said without exaggerating that electronic flash opens up a new world of opportunities in close-up work. In every meadow and in every pond you will find a large variety of interesting subjects. Just think, for instance, of the world of insects, which certainly encompasses some of the strangest forms of life. Here there are creatures of the utmost beauty and others which look like creatures from nightmares. And insects are plentiful everywhere. For shooting wild-life pictures you don't have to go on safari in Tanganyika: just take your camera and explore your backyard. But I also have to add a word of caution: Don't expect outstanding results right from your first shots. In this field you will need much patience and real interest in your subjects. Always first watch your subjects carefully and try to learn something of their habits. This will save you a lot of disappointment as well as a waste of film.—THE END

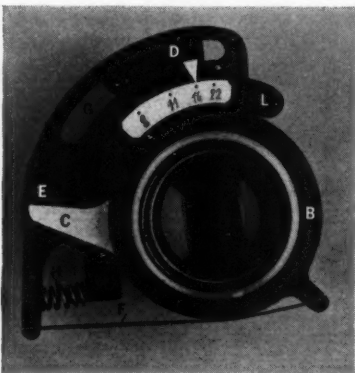
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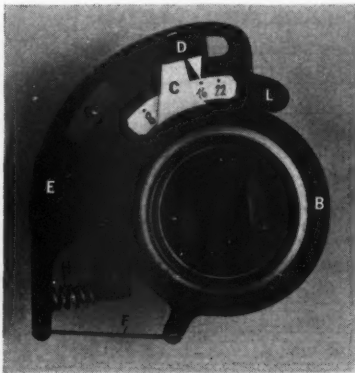
1. Eisenbeiss close-up camera rig uses Visoflex I, Leica or Praktisix, double cable release, home-made grip and plastic auto diaphragm.



2. Diaphragm ring of Hektor, A, fits velvet-lined ring, B. Flexible tongue C, locks in catch E when unit's cocked. Cable release socket is behind E.



3. When lever L is pressed, compressing spring H, marker D can slide in slit G to change f/stop. When cocked, E holds C, rubber F is stretched.



4. When cable release is pressed through hole in E, C is dislodged and flies upward to stop D, thus closing lens to predetermined opening.

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BLACK AND WHITE
WITH PROCESSING

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16mm 100' available in both
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35mm BLACK & WHITE BULK 100 FT.
EKTACHROME 20 exp.\$1.00
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ANSOCCHROME	135-36 Exp.	10.95	20.95	32.95
KODACHROME	8mm Rolls 25' Dble.	8.05	15.90	26.00
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	8mm 100' Dble. Bolex with 200' R&C	26.00	51.00	84.50
SUPER	8mm Rolls 25' Dble.	9.75	18.90	30.50
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B&W MOVIE FILM	8mm 25' Roll	6.45	12.25	19.50
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FROM THIS ORIGINAL	YOU CAN HAVE	approx. 2 1/2" x 3 1/2" any assortment	3 1/2" x 5 1/2" any assortment	4 1/2" x 6 1/2" any assortment	5 1/2" x 7 1/2" any assortment	6 1/2" x 8 1/2" any assortment			
35mm	COLOR SLIDE	P 5 for 1.00 20 for 2.99	P 4 for 1.00 15 for 2.99	P 3 for 1.00 12 for 2.99	P 50¢ each 5 for 2.00	P 85¢ each 3 for 2.00	P 1.75 each 2 for 3.00		
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620	SQUARE KODACOLOR SLIDES								
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 BOX 35064, LOS ANGELES

OUTSIDE FILTERS

(Continued from page 54)

photographed, a thick filter changes the effective focal length of the lens (Fig. 5). The change is less obvious when a distant object is photographed since nearly parallel rays of light are hitting the filter. In each case, however, the rays of light have been altered. This is always true when a filter is used in any kind of optical system.

For general and technical use, there has to be some fairly comprehensive way to classify filters. It's done by measuring the bandwidth.

Two important characteristics of all filters are the bandwidth of radiation absorbed and the level of absorption. Bandwidth relates to the range of the various wavelengths not significantly absorbed and is sometimes referred to as a "window." The width of the window is measured at a point 0.3 density units above the minimum peak density of the filter (Fig. 4). On pages 54 and 55 we've classified some of the common filters according to their bandwidth. We've included a brief resume of their use.

How stable are filters? Do they fade? They certainly do, but you can prevent fast deterioration by careful handling. Keep them away from excessive heat, humidity and light (or any other radiation). Treat them as you would your prize color transparencies, since both filters and color transparencies (and prints) are made up of organic dyes which deteriorate with time. The deterioration is gradual if the conditions of storage are ideal. A cool, dry, dark place is best.

How long do dyes last?

The stability of each filter varies with the particular dye it contains. Some manufacturers have published this information. Kodak, for example has four classifications for its filters: "A" stable, "B" relatively stable, "C" somewhat unstable, "D" unstable. Each filter is subjected to three different conditions of testing: 1. Two weeks' exposure to daylight in a south window; 2. Twenty-four hours' exposure to a "Fad-Ometer"; 3. Two weeks' exposure at two feet to a 1000-watt tungsten lamp. Skylight filters are rated "ACA." This means that such filters are stable under test conditions 1 and 3 but somewhat unstable when exposed for twenty-four hours to a Fad-Ometer. The stability of all gelatin skylight filters from any reputable manufacturer will be the same under the same conditions of test. For example, K2 and K3 filters (AAA) are more stable than K1 (BBA). Stability varies because manufacturers, in order to get the proper absorption characteristics of a

(Continued on page 98)

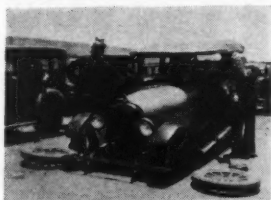


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TWO TARS
with
LAUREL & HARDY

THIS 8mm. MOVIE
WILL BE GIVEN TO YOU
FREE OF CHARGE
WITH THE PURCHASE OF ANY THREE REELS
OF BLACKHAWK MOVIES
(SEE LISTING)

Produced by Hal Roach in 1928 and perhaps the funniest comedy in the almost 100 films they made together between 1928 and 1952. The story of two gobs on shore leave in San Diego — and a traffic jam involving a cement mixer, two gobs on shore leave, and a line of vintage automobiles that stretches clear to the horizon. (U.S.A. only)

810-73, 8mm. silent version, about 400-feet on 3 reels (pp-19) \$13.98



**THE FIRST 500-MILE
INDIANAPOLIS SPEEDWAY RACE**
1911

THIS 8mm. MOVIE
WILL BE GIVEN TO YOU
FREE OF CHARGE
WITH THE PURCHASE OF ANY THREE REELS
OF BLACKHAWK MOVIES
(SEE LISTING)

You'll see the first of the Indianapolis Speedway Classics in amazing detail considering the year in which the race occurred. There are good shots of cars in the line, circling the track in platoon formation before the race, and then taking off at what was terrific speed for the day. Good scenes, too, of tires pitting from wheels — a crack-up — and the winner!

810-81, 8mm. silent version, about 150-feet (pp-18) \$ 4.98



**FAMOUS TRAINS
OF WESTERN RAILROADS,
1897-1903**

THIS 8mm. MOVIE
WILL BE GIVEN TO YOU
FREE OF CHARGE
WITH THE PURCHASE OF ANY THREE REELS
OF BLACKHAWK MOVIES
(SEE LISTING)

Tremendous historical action scenes of railroads of 60 and almost 70 years ago — Fast Mail and Overland Express, Northern Pacific; Overland Limited, Union Pacific; California Limited, Santa Fe; Overland Mail, Southern Pacific; Sunset Limited, Southern Pacific.

810-183, 8mm. version, about 150-feet (pp-18) \$5.98



EASY STREET
with
CHARLIE CHAPLIN

THIS 8mm. MOVIE
WILL BE GIVEN TO YOU
FREE OF CHARGE
WITH THE PURCHASE OF ANY THREE REELS
OF BLACKHAWK MOVIES
(SEE LISTING)

Perhaps the top comedy of what many believe to be the top period in Chaplin's career — one of the two reprints made by the Leno Star Film Co. for distribution by Mutual in 1917. It's the story of the down and out little tramp who becomes a policeman in the city's toughest area — that surrounding Easy Street — and how he brought law and order back to the area, and increased attendance at the Rescue Mission.

810-237, 8mm. silent version, about 350-feet on 2 reels (pp-21c) \$ 9.98

Yes, during July or August, by purchasing the required number of reels from the wide selection of Blackhawk 8mm. titles listed below, at Blackhawk's regular prices, you may get any or all of the above four best-selling Blackhawk 8mm. movies ABSOLUTELY FREE! You pay only the postage!

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(U.S.A., Alaska, Hawaii Only)

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- 810-98 THE LIVE GHOST (300-feet on 3 reels), pp-39c 13.98
- 810-148 THE MUSIC BOX (350-feet on 4 reels), pp-39c 13.98
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- 810-221 SAPS AT SEA (900-feet on 6 reels), pp-41c 24.98
- 810-147 SCRAM (300-feet on 2 reels), pp-21c 13.98
- 810-139 THEM THAR HILLS (450-feet on 3 reels), pp-39c 9.98
- 810-178 TIP FOR TAY (300-feet on 2 reels), pp-21c 13.98
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- 810-1 BARNEY OLDFIELD'S RACE FOR A LIFE (150-feet) with Mabel Normand, Ford Sterling, Mack Sennett and Barney Oldfield, pp-18c 4.98
- 810-245 THE DESPOTIC SOUNDREEL (300-feet on 2 reels), with Ford Sterling, Monte Dorey and The Keystone Cops, pp-21c 9.98
- 810-252 GUSSELL'S WAYWARD PATH (200-feet), with Sid Chaplin, pp-18c 5.98
- 810-236 LOVE, SPEED AND THRILLS (1915 (200-feet), with Mack Sennett and Chester Condit 5.98
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- 810-254 MISS PATTY'S SEASIDE LOVERS (200-feet), with Fatty Arbuckle, pp-18c 5.98
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- 810-194 TEDDY AT THE THIRTEETH (300-feet on 2 reels), with Gloria Swanson, Wallace Berry, Bobby Vernon, pp-21c 9.98
- 810-262 A VERSATILE VILLAIN (200-feet), with Louisa Fazenda, Charlie Chase, pp-18c 5.98
- 810-169 WIFE AND AUTO TROUBLE (200-feet), with Willie Collier, Max Baucus and The Keystone Cops, pp-18c 4.98

ALL 8mm. MOVIES LISTED HERE THAT ARE 200-FT. OR LESS IN LENGTH ARE ONE REEL FILMS

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photographed in the late 1890s and the early 1900s

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photographed from the mid-1930s until the early 1950s

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- 810-240 SMOKE AND STEAM ON THE C. & E. L. (150-feet), pp-18c 5.98
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Specialty for Civil War Centennial Year — this kaleidoscopic presentation of many of the great moments from this so well remembered film and the personalities who became famous because of it — Lillian Gish, Henry B. Walthall, Wallace Reid, Mae Marsh, Donald Crisp and Rosalind Wisall. You'll see Sherman's march to the sea, Lee's surrender to Grant at Appomattox, the assassination of Lincoln and the coming of the Carpetbaggers. Licensed to Blackhawk under copyright by Epoch Producing Corporation.

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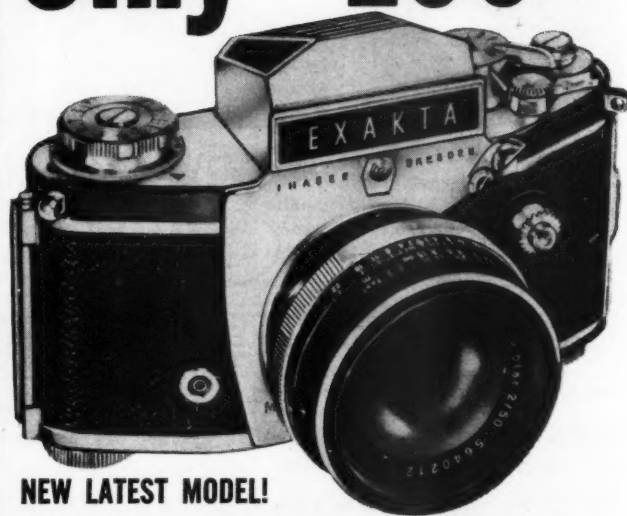
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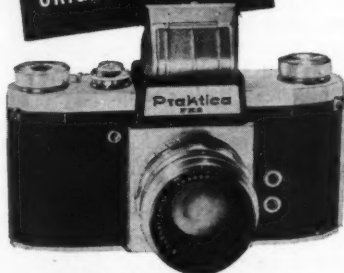
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A black and white photograph of a Praktina FX camera, showing its front view. The camera has a prominent lens in the center, a viewfinder on the right, and various control dials and buttons on the top and front. The brand name 'Praktina' and model 'FX' are visible on the top plate.

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OUTSIDE FILTERS

(Continued from page 94)

filter, sometimes must use dyes which do not have the best stability. For critical color work, then, it would be to your advantage to test each filter photographically before using it, even if it is newly purchased.

When you find it necessary to clean your filters follow this procedure:

- Use a soft brush to lightly brush away dust and grit.
- Wipe the surface carefully and gently with a lens cleaning tissue or with a soft, clean, lintless cloth.

If it is necessary to use moisture in conjunction with (b), breathe on the surface or use a good lens cleaner. (Be careful in using such cleaners, for if the filter is cemented they can act as solvents for the cement and thereby cause the filter to separate.)

Isn't it surprising to find so many intricacies in a small piece of colored optical material?—THE END

MULTI-EXPOSURE

(Continued from page 77)

pieces of leftover junk (tin can, cardboard tube, etc.) which will be just as effective, provided that you can figure out some way to fasten it to the lens mount securely and accurately.

Of course, you can make multiple exposures with almost any camera, but due to the trial and error nature of the technique, nothing matches the Polaroid camera for this type of fun.

The principle of the matte box

To make and use a matte box successfully, you must first understand one important principle. The movable slide must be so made and so placed as to give the effect that you are deep inside a darkened room and are photographing the bright outdoors through a narrow movable window that fills only a small part of the field of view.

Laurie's matte box, and the one shown, both are deep enough to place the slide 2 in. ahead of the lens. This seems to be an excellent location for use with the standard large Polaroid Land camera. If the slide is too close to the lens you can't expose various areas of the film selectively. While it is possible to use a slide somewhat closer than 2 in. with the Polaroid camera, you have to use a very narrow slit and the placement becomes quite tricky.

The design shown can be fitted to all models of the Polaroid camera except the small Highlanders and the new electric eye types. The only reason it won't work with the electric eye models is that

(Continued on page 102)

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MULTI-EXPOSURE

(Continued from page 98)

the horizontally moving slide covers the electric eye. However, it would not be difficult to design a device to get around this problem and I hope to present one in a future issue.

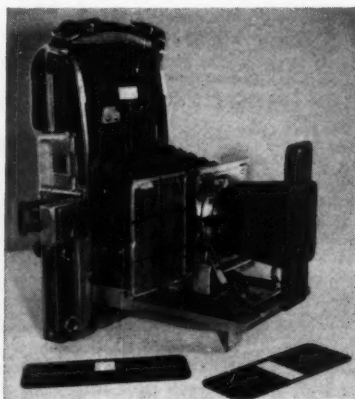
To make a controlled multiple exposure, the camera has to be on a sturdy tripod or other support. Don't move the camera or change the focus at any time. All the exposures should be similar. Therefore it is desirable to make your pictures with diffused, fairly even light.

For a simple double exposure, first place your subject at one side of the scene (right, for example) and aim the camera so your subject is in a corresponding position in the viewfinder scene. Move the slide so the slit is all the way to the right side of the matte box. Make the exposure exactly as you would for a normal single exposure.

Then relocate your subject on the opposite side of the scene (check this carefully in the viewfinder), move the slide all the way to that side, make the second exposure, and develop the print in the normal manner.

The maximum number of exposures possible on a single print is limited only by your own skill and patience. Provided that you have a matching viewfinder scene divider and suitable slides, you can divide the picture into 3, 5, or even 10 parts. Of course, the more you divide up the print, the smaller the slit you need and the more tricky the placement.

Between the various sections of exposure there is a blending area. You must keep your subject out of these areas or you'll get double exposures where you don't want them.—THE END



Laurie Seamans used this outfit for her quintuple exposure. Four shots were made through the half-length slit slide; the fifth was made through a full-length slit slide. By taping over part of a full-length slit, you can produce an opening of any size or shape desired, so a single slide can be adapted for many purposes.

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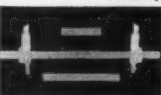
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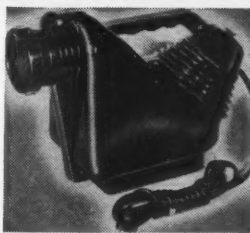
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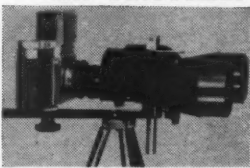
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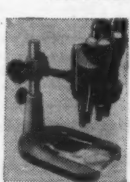
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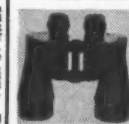
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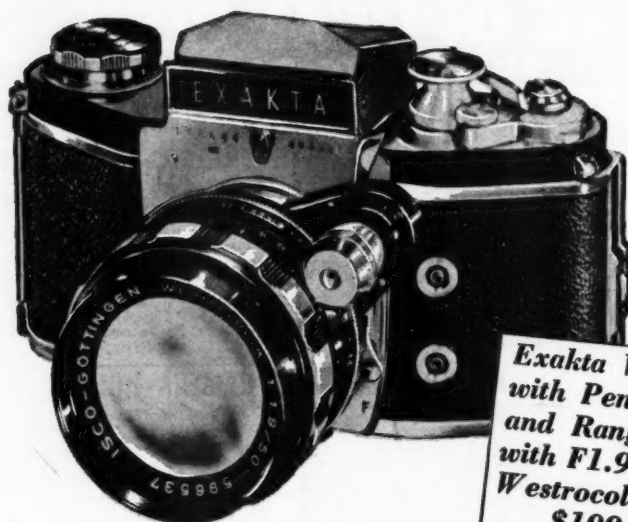
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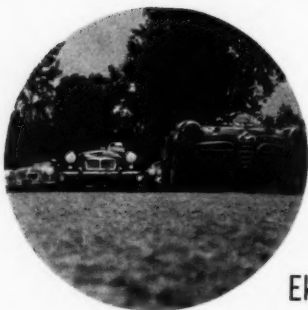
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